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Master Thesis

Buybacks to Bailouts:

Firm Behavior and Implications for Financial Instability

Author: Kevin Peter Curran
Supervised by: PhDr. Jaromir Baxa Ph.D
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Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature, and the thesis has not been used to obtain a different or the same degree.

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Prague, 3/5/2021 Signature *Kevin Curran*.

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Abstract

Share repurchases reached a decade-high level in 2019, just as US equity indices reached a historical zenith, a move in tandem that supports more than merely a correlative relation. However, this relationship moves beyond that of just a close tandem move in indices alongside share repurchases, but to the behavior of firms which began to leverage themselves in order to promote the evermore profitable strategy of large buyback programs. Those repurchases indicate an idiosyncratic and procyclical leveraging that, while much smaller in scope and less combustible by lack of derivative amplification, led to the gorging on unsustainable debt described by Hyman Minsky and experienced in the Great Financial Crisis in the banking industry. In this case, the 'Minsky moment' that may have inevitably popped the self-promotion bubble came in the form of the 'black swan' event of the coronavirus outbreak. This paper aims to historically frame the issues, with delimitation of the effect of buybacks from 2009 to early 2020 with scant reference to historical factors influencing the increased usage of share repurchase programs. The analysis within this historical scope will reflect empirical measures on the market-wide level of share buybacks and debt levels alongside the concurrent equity index acceleration. Further, debt levels among firms more broadly will be employed to indicate leverage trends as it moves alongside share repurchase frequency. The paper will also make use of case studies, to illustrate the corporate governance that mirrors the points and cycle posited by Minsky. The paper will conclude with potential public policy lessons offered in bailout programs and their proper application as well as open questions on Federal Reserve policy and additional issues worthy of exploration in future papers.

Keywords

Financial instability, Capital Markets, Federal Reserve, Share Repurchase, Corporate Debt, Leverage, Buyback, Free Cash Flow, Bailout

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Master's Thesis Proposal

Student: Kevin Curran
Email: 96608593@cuni.cz
Phone: +420 720 626 590
Specialization: IEPS

Supervisor: Dr. Jaromír Baxa, Ph.D
jaromir.baxa@fsv.cuni.cz
+420 777 152 097
Defense Planned: June 2021

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Motivation:

The emergence of equity markets to unprecedented heights less than a decade after one of the most significant crashes in history is often regarded as nothing short of miraculous. While the rationale for such a rise is multivariate, including novel and hyper-aggressive Federal Reserve action, record-low interest rates that encouraged equity risk, a rise in non-human market actors, and high levels of fiscal stimulus, the effect of share repurchase programs and their widespread utilization is perhaps at once overlooked and prescient.

Hypothesis #1: Share buybacks increased largely in tandem with and helped support the record equity returns from 2009-2019.

Hypothesis #2: The rise in share buybacks is indicative of growing irrationality among corporate boards and eventually led to ponzi-like behavior within the scope of these programs, especially in the use of debt to finance these programs.

Hypothesis #3: The rampant use of buybacks, particularly those funded by debt, hampered overall market stability and were a significant factor in necessitating large scale bailout-like programs in the wake of the coronavirus pandemic.

Methodology

Qualitative aspects of the behavior such as the historical review of events and the behavioral impact as reflected in Minsky's writings will be employed to ground the paper, while measures of the level of share buybacks, the correlated returns of major US indices, and the leverage ratios of US-based firms will buoy the empirical standing of the paper. Such data will be garnered from a broad array of sources, including major banks' market analyses (such as Goldman Sachs and JP Morgan), scholarly publications, and raw data from the SEC, credit rating agencies, and the Federal Reserve.

1. Introduction

The 2008 financial crisis has often been dubbed the quintessential example of a "Minsky Moment", not least by those that would come to deal with its consequences in terms of policy[1]. From this event, much was gleaned as to the fragility of the banking system with various implications for both regulation and prudent firm behavior generally. While the cause of the 2008 crisis that emanated from the US banking sector and soon rippled across most of the developed world was far from univariate, a notable degree of the impetus behind the implosion was in irrational behavior of both individuals and firms[2].

Foreseeing this type of irrationality was an at-the-time obscure economist, Hyman Minsky, who had predicted the paradoxical 'destabilizing stability'[3] found in the last gasps of the protracted Great Moderation. In his most cited, and indeed prophetic work, he noted that long periods of stability tend to push banking institutions from safe practices, what he termed "hedge finance", towards more speculative finance as the illusion of everlasting stability cements itself. Eventually, this reaches its zenith in "ponzi finance", which as the name suggests, is ultimately unsustainable[4]. While Minsky's work pertains specifically to the financial sector, the rationale and logic of the increasingly risky behavior under the false assumption of diminished risk can apply more broadly.

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[1] Yellen, J. L. (2009, April). Minsky Meltdown: Lessons for Central Bankers. San Francisco, CA: Federal Reserve Bank of San Francisco.
[2] Vasile, D., Sebastian, T. C., & Radu, T. (2011). A behavioral approach to the global financial crisis. *Economic Science*, *20*(2), 340-346.
[3] Wray, L. R. (2015). *Why Minsky matters: An introduction to the work of a maverick economist*. Princeton University Press.
[4] Minsky, H. P. (1992). The financial instability hypothesis. The Jerome Levy Economics Institute Working Paper, (74).

Indeed, many of the actions taken to alleviate the consequences of the Minsky moment that caused the Wall Street meltdown that cascaded in late 2008 into 2009, namely in bailing out key industries, may have sparked a new era of risks receding from the mind of both investors and corporate boards. In fact, this is eminently reasonable in hindsight in the face of unprecedented assistance and accommodation from the Federal Reserve and a backstopping fiscal regime[5], a coaxing to return to risk-on behavior to rouse the economy back to its feet about a decade ago may have helped in accumulating instability about a decade later.

The 'black swan event' of the coronavirus was, of course, not readily foreseeable and, even if somewhat foreseeable given East Asia's previous episodes with respiratory illness outbreaks and epidemics, its scope and scale of impact on the global economy was never before seen. Further, the event did not mark a financial crisis of the proportions seen in 2008 as it did not overly impact the financial or banking sectors specifically[6]. Indeed, the rapid action from central bankers in propping up credit markets and curbing cascading defaults, innovative fiscal action was largely effective despite early alarm bells and still significant economic drawdowns[7]. These actions, coupled with some of the safeguards put in place in the wake of the Great Recession and a host of other, more minor factors, were crucial in preventing a larger crisis.

However, there were many industries and specific firms within certain industries that were not as insulated as the banking sector and, in many cases, had ultimately helped to create a situation under which either significant assistance, loans, and paycheck protection[8] was

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[5] Bartsch, E., Boivin, J., Fischer, S., & Hildebrand, P. (2019). Dealing with the next downturn: From unconventional monetary policy to unprecedented policy coordination. *Macro and Market Perspectives*.
[6] Demirgüç-Kunt, A., Pedraza, A., & Ruiz Ortega, C. (2020). Banking sector performance during the covid-19 crisis. *Demirguc-Kunt A, Pedraza A, Ruiz-Ortega C. Banking Sector Performance During the COVID-19 Crisis. World Bank Policy Research Working Paper*, *9363*.
[7] Granja, J., Makridis, C., Yannelis, C., & Zwick, E. (2020). *Did the Paycheck Protection Program Hit the Target?* (No. w27095). National Bureau of Economic Research.
[8] ibid

necessitated, but even full-scale bailouts akin to those offered in 2008's Minsky moment. In this case, it was not complex derivatives ballooning bets or unsafe loan practices, but a self-fulfilling crescendo of share repurchase programs that chased a seemingly never-ending bull market in equities as even the world's largest and most respected hedge-funds declared an end to market cycles[9].

With this in mind, many firms and their boards signed off on unparalleled levels of share buybacks on the belief that share prices would continue to rise, which in a somewhat perverse manner was self fulfilling given the dynamics of open-market share repurchases. In fact, share buybacks reached such a fever pitch never before seen in 2019, shortly before the coronavirus shook the balance sheets of many companies, private and publicly traded alike. In many cases, these buybacks were even financed on the back of debt[10], further illustrating the issue of these non-additive capital allocations. More importantly, the logic of utilizing debt to chase higher returns via share repurchases is directly analogous to the ponzi finance behavior examined by Minsky in the financial sector.

In essence, the climate of easy money instigated by the Federal Reserve, a risk-on mood promoted by fiscal policymakers, and irrational exuberance amidst the longest bull market in modern history made for an epic March drawdown that, despite its brevity, brought home the idea that capital preservation retains a place in responsible corporate governance. This was especially highlighted as significant governmental action barely saved thousands of firms, often operating within critical industries, from bankruptcy. In order to understand this idiosyncratic

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[9] Kumar, Nishant (2020, Jan. 11), "Bridgewater Co-CIO Bob Prince Says Boom-Bust Cycle Is Over". *Bloomberg.*

[10] Cox, Jeff (2019, July 29) "Companies are ramping up share buybacks, and they're increasingly using debt to do so". *CNBC*

cycle, Minsky might yet have another lesson to apply in terms of this underlying factor of share repurchases and their capacity to undermine the stability of so many firms so as to threaten the overall economy. The prescient insights he offers could well be extremely pertinent to preventing such problematic ponzi behavior in the future.

As such, this paper will offer further evidence of the pro-cyclical nature of stock buybacks that align with the idea of the destabilizing nature of stability. In doing so, the paper will offer granular examples of this behavior with attention to specific firms and industries that counted themselves among the most distressed in the immediate aftermath of COVID-19 economic shutdowns.

In reviewing these test cases, the expected pro-cyclical nature of buybacks was confirmed, along with correlative evidence in the buybacks promoting increased short term share prices, particularly around earnings releases. Still, conjecture does remain on the magnitude of this impact, both in broader index moves and the individual test cases. Finally, reviews of the test cases of firms, as well as the industry case of airlines, indicate that lawmakers extended larger loans and grants to firms that had both spent heavily on buybacks and found themselves heavily indebted. In contrast to what might be expected, the market cap, employee count, and market share of the airlines appeared to play a smaller role in decisions to extend larger grants to each carrier. As such, the paper offers both a cautionary note to corporate governors pursuing increased share buybacks into extended market cycles, while also offering regulators and lawmakers a review of perhaps overlooked factors in the distribution of bailout-like programs.

A. Literature Review

While there will be periodic mention of specific literature pertinent to each of the subsequent subsections of this paper, it is worthwhile to offer a brief overview of some of the

more pertinent pieces of research present at the moment and the areas where this research will be additive.

Much of the existing literature on Minsky focuses solely on the financial crisis and the more obvious ponzi behavior found in the mortgage industry prior to the crisis, e.g. Wray[11], or in terms of business cycles broadly, e.g. Palley[12] and Davis[13], or market signaling on buyback announcements, e.g. While large scale empirical data has been explored with great detail, most notably by Pedrosa[14]. However, far less focus has been honed into specific firm and industry level, nor has a great deal of focus been specifically directed upon buybacks and the underlying behavioral dynamics of this specific behavior.

Similarly, the research that touches upon the topic of buybacks, that is understandably multitudinous in the wake of increasing share repurchases in recent years, deals with the impact on share prices and potential benefits, e.g. Asness[15], or the potential uses for free cash aside from piling it into a company's own stock, e.g. Lazonick[16]. On the former, I will review and display the mechanistic fashion in which open market share repurchases artificially improve earnings ratios that are used as important metrics in valuing a stock, while also reducing dilution that might adversely affect share price. While there is heated debate on the long term effects as well as the necessary use of programs in certain instances, particularly in terms of share dilution, the

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[11] Wray, L. R. (2015). Minsky's financial instability hypothesis and the endogeneity of money. *Financial conditions and macroeconomic performance: essays in honor of Hyman P. Minsky*, 161-180.
[12] Palley, T. I. (2011). A theory of Minsky super-cycles and financial crises. *Contributions to Political Economy*, *30*(1), 31-46.
[13] Davis, L. E., De Souza, J. P. A., & Hernandez, G. (2019). An empirical analysis of Minsky regimes in the US economy. *Cambridge journal of economics*, *43*(3), 541-583.
[14] Pedrosa, Í. (2019). Firms' leverage ratio and the Financial Instability Hypothesis: an empirical investigation for the US economy (1970–2014). *Cambridge journal of economics*, *43*(6), 1499-1523.
[15] Asness, C., Hazelkorn, T., & Richardson, S. (2018). Buyback derangement syndrome. *The Journal of Portfolio Management*, *44*(5), 50-57.
[16] Lazonick, W. (2014). "Profits Without Prosperity: Stock Buybacks Manipulate the Market and Leave Most Americans Worse Off." Harvard Business Review.

mechanistic effect is sufficient to prove an incentive, particularly for short-term focused corporate boards. Additionally, there have been multiple analyses of the signaling effect of buybacks, through numerous methods of regression which will be discussed at length later in this paper.

On this point, my contribution to the discussion will be most notable in examining the correlation between firm stability and the issue of debt utilized to finance buybacks. While this topic has been recognized in professional literature at the broader industry level, e.g. by the IMF, firm level dissection and corporate behavior has not received significant attention aside from analyst notes and investment theses from major banks. Academic literature has been decidedly more broad. Additionally, expertise from a journalistic perspective in covering firm level activity through the lens of managers and retail investors has largely been left unexplored as of yet.

Lastly, given the recency of the COVID-19 crisis and its sudden impact on financial and specifically upon equity markets there is not a great deal of literature examining the factors that exacerbated the downturn provoked by the pandemic. As such, there is tremendous opportunity to contribute meaningfully to factors necessitating bailouts of numerous companies and its mirroring of understood dynamics such as Minsky's work, namely in buybacks, and guidance on impact for corporate governance and indeed governments digging into fiscal coffers to prop up destabilized businesses in future. That said, on the point of bailouts there is already quite a wealth of literature assessing the immediately visible efficacy of certain bailout programs, which will be utilized at length in the later sections of the paper.

2. Making Sense of Minsky's Insights

It would be nonetheless remiss if Minsky's key insights into financial stability and the financial sector were not addressed at least in some detail, as shifting them to the present day

without prior context would be uncouth. Minsky, in observing the cycle of behavior, particularly in the financial sector, noted that bubbles based on anomalous behavior was perhaps a misnomer. Minsky instead argued that protracted eras of stability were ultimately destabilizing in and of themselves, often pacifying concerns to the point that risks are not recognized[17].

It is important to distinguish this from typically noted "bubbles" that are usually confined to specific sectors or can be explained away by numerous alternative explanations, including the popular idea of "irrational exuberance"[18] in the moment itself. In this case, the proximate cause is most often called into question, as it offers a culprit for a crisis and therefore some solace in its explanation.

In contrast, Minsky notes that the destabilizing effects of long-term moderation are endemic and create a situation by which behavior that is in hindsight irrational and unsustainable (ponzi), is readily justified in real time[19]. That is certainly not to say that certain bubbles can appear and exacerbate the endemic issue, as was seen in the situation of the arguable over-securitization of mortgages and the housing bubble of 2008[20]. Instead, it is to say that even those actions that create a placid economic environment for an extended period of time are in themselves destabilizing due to their seemingly unavoidable effect on risk appetite which gradually shifts along the risk curve under Minsky's conception. This moves from hedge finance, the safest, towards speculation and ultimately toward the final stage of ponzi finance at the avaricious extreme.

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[17] Wray, L. Randall (2008). Financial markets meltdown: What can we learn from Minsky?, Public Policy Brief, No. 94, ISBN 978-1-931493-75-8, Levy Economics Institute of Bard College, Annandale-on-Hudson, NY

[18] Shiller, R. J. (2015). Irrational exuberance: Revised and expanded third edition. Princeton university press.

[19] ibid

[20] Wray, L. Randall (2008) : Financial markets meltdown: What can we learn from Minsky?, Public Policy Brief, No. 94, ISBN 978-1-931493-75-8, Levy Economics Institute of Bard College, Annandale-on-Hudson, NY

Generally speaking, this dynamic takes time to manifest itself, most notably in the 'Great Moderation' that, despite bubble bursts like that on1987's "Black Monday"[21], the Russian Ruble Crisis[22] and subsequent collapse of Long Term Capital Management[23], and the Dot Com Bubble[24], was an epoch characterized by steadily increasing asset prices and placid overall economic conditions. The time it took to breed the 'destabilizing stability' that Minsky speaks of was no sudden act. Arguably, the entirety of Alan Greenspan's time atop the Federal Reserve, no doubt helped by his eager exercise of repo markets[25], was a time marked by low inflation, largely low unemployment, and, importantly for our observations, little need for major market intervention by government or Federal Reserve forces, outside of the immediate aftermath of 9/11[26].

While one might feel compelled to argue that the Dot-Com bubble was an early signal that the prolonged era of stability was fueling undue speculation and thus instability ala Minsky's predictions, this episode is much more akin to Shiller's writings on irrational exuberance and the much-feared atmosphere of euphoria in markets. The novelty of internet firms is an idiosyncratic example and does not reach the structural levels that Minsky writes of. Further, the listing of companies with no tangible revenue or profits, nor even a path to profitability in many cases, was never stable to begin with. In this case, almost no rational players were "lulled to sleep" as you might glean from Minsky's ideas, but instead were either irrationally exuberant or happily

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[21] Bogle, J. C. (2008). Black Monday and black swans. *Financial Analysts Journal*, *64*(2), 30-40.
[22] Desai, P. (2000). Why did the Ruble collapse in August 1998?. *American Economic Review*, *90*(2), 48-52.
[23] Jorion, P. (2000). Risk management lessons from long-term capital management. *European financial management*, *6*(3), 277-300.
[24] Ofek, E., & Richardson, M. (2003). Dotcom mania: The rise and fall of internet stock prices. *The Journal of Finance*, *58*(3), 1113-1137.
[25] Miller, M., Weller, P., & Zhang, L. (2002). Moral Hazard and The US Stock Market: Analysing the 'Greenspan Put'. *The Economic Journal*, *112*(478), C171-C186.
[26] Kim, H., & Gu, Z. (2004). Impact of the 9/11 terrorist attacks on the return and risk of airline stocks. *Tourism and Hospitality Research*, *5*(2), 150-163.

dancing to the market rhythm while believing in their ability to time exactly when the music would stop playing. Finally, it is crucial to notice that the damage done by the recession emanating from this asset bubble burst was quite minor.

Instead, the real blow-off in what was termed a "Minsky Meltdown" by former Federal Reserve Chair Janet Yellen was clearly present in the Great Financial Crisis[27]. The crucial added detail to the already established overoptimism that can lead to vice in terms of added risk is the amplification of risk through the use of debt. As Yellen herself noted, the Great Recession was in large part a tale of investors chasing returns at the cost of liquidity[28]. In the words of Neuberger Berman Managing Director Steve Liesman, investors "mistook leverage for genius"[29].

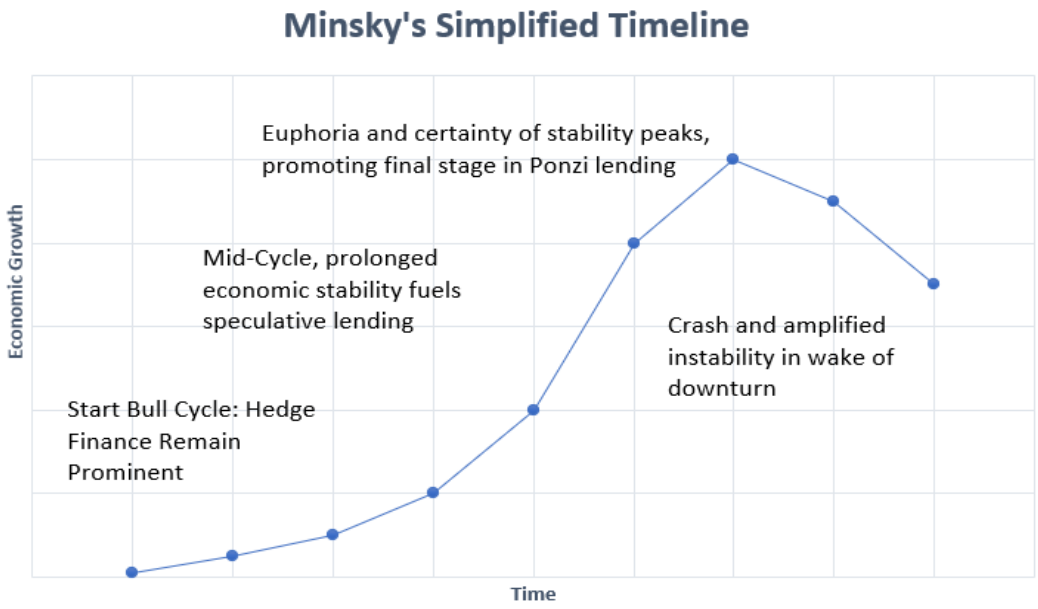
For Minsky, the true crisis comes not simply once there is overeager and undue risks taken by market participants, but once this behavior manifests itself in debt financing of such undue behavior. This is because the behavior of debt financing speculation can only continue insofar as market dynamics continue favorably and support continuous asset inflation to sustain

[27] Yellen, J. L. (2009, April). Minsky Meltdown: Lessons for Central Bankers. San Francisco, CA: Federal Reserve Bank of San Francisco.
[28] ibid
[29] Kumar, Nishant (2018, Feb. 23) "Steve Eisman Says Wall Street Execs Mistook Leverage for Genius". *Bloomberg*.

the behavior. Once this music stops playing, so to speak, the house of cards inevitably falls in on itself.

Exhibit 1

In terms of lenders and borrowers this is relatively straightforward, and a perfect corollary is offered in the combustion of the mortgage industry in the United States in 2008.



However, the same behavioral pattern is identifiable not only within the mortgage industry, but more broadly in the ills of certain market dynamics, not least with the behavior of many financial institutions that securitized and overplayed their bets on such complex instruments[30]. Nor did the behavior that marked the era and its eventual exclamation point die in the crisis itself. Indeed, the actions that propped up the market recovery and promoted a return to risk-on behavior that would return the economy to its feet may have yet encouraged another

[30] Stout, L. A. (2011). Derivatives and the legal origin of the 2008 credit crisis. *Harv. Bus. L. Rev.*, *1*, 1.

epoch of undue risk taking under Minsky's conceptions, albeit in another arena of corporate behavior.

Indeed, a miraculous economic comeback that came to undergird the longest bull market for equities in modern history was not just jump-started by accomodative monetary policy and supportive fiscal policy, but by a rapid pick up in the already building trend of stock buybacks by corporate boards that aided in inflating asset prices. In terms of market mechanics, this created an environment by which publicly traded firms fueled their own overconfidence which was echoed by Wall Street and retail investors alike, chasing almost self-fulfilling hopes for increased returns.

Crucially, in many cases this overconfidence in a firm's own share price appreciation was underwritten by debt, increasing instability in the market overall in the same fashion forecast under Minsky's guidelines. In this sense, the slow roll of speculative share repurchase programs gradually moved towards the ponzi end in a significant subsection of US firms at precisely the wrong time, as the coronavirus pandemic decimated demand in short order across countless industries. In this sense, countless industries came calling for bailouts that otherwise could have been provided for by unnecessary spending on buybacks and, to a lesser extent, dividends, that offer little to the overall firm's health outside of the expected dynamic of steadily increasing asset prices.

In short, this moves in tandem with Minsky's expectations through a tangential avenue, as the certainty in economic stability in the form of steady share price appreciation this fueled speculation that emptied the coffers of companies of otherwise buttressing balance sheets and, in the worst cases, fueled the ponzi behavior of taking out loans in order to finance share repurchase programs that would only prove sustainable should share prices continue to

appreciate at rapid rates, ad infinitum. The logic of the overall observations remain eminently the same.

3. The Buyback Build Up

However, there are subtle differences that augment the precise behavioral dynamics that form the conceptions of Minsky's financially focused work. On the issue of buybacks, it is important to first illustrate the dynamics of share buybacks, their purposes, and to ultimately recognize their impact on share prices and how the process of authorizing large scale buyback programs in itself creates a sort of hazard.

The rationale for a share buyback program is by no means nefarious immediately, as an effort on behalf of a board to reinvest in itself is admirable in many ways. Indeed, it signals the confidence of management that shares are undervalued and that the company is in better shape than the market is recognizing and therefore reinvesting will pay off for the company in the long run[31]. Further, there are certain tax advantages, share dilution counteractions, and diminished risk as compared with other investment schemes, such as new research and development[32].

Further, there is a crucial distinction in which buybacks one is discussing. Historically, tender offers, a program under which a company offers to purchase shares from existing shareholders at a specific, preset price have held an important place. This can be done in order to concentrate ownership and control the direction of a company[33]. These repurchase programs are clearly designed with ownership and management issues in mind and therefore do not closely

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[31] Van Rixtel, A., & Villegas, A. (2015). *Equity issuance and share buybacks*. Bank of International Settlements.
[32] ibid
[33] Lazonick, W. (2014). "Profits Without Prosperity: Stock Buybacks Manipulate the Market and Leave Most Americans Worse Off." *Harvard Business Review.*

follow the dynamics and ills described by Minsky Similarly, .fixed-price tender offers, Dutch auction tender offers, and transferable put right distributions, and targeted stock repurchases do not necessarily fit appropriately into this category.

Instead, the dominant modus operandi among US firms in open market repurchase programs that have quickly come into vogue are very much in line with these designs. As no pre-set price is pre-agreed and no pre-announcement necessarily communicated to shareholders ahead of a broad notification, these programs have immediate repercussions in terms of company earnings and share prices. This is largely a result of the total shares available after such open market programs necessarily becoming scarcer and the demand therefore outweighing supply[34]. Given the size of many buyback programs for publicly traded firms, this is no small detail, especially in the short term.

The idea of making shares more scarce can immediately increase share prices from the simple dynamic that demand for shares increases while supply wanes. However, it need not even be so direct to have a large impact. Most notably, an open market repurchase program ahead of an earnings report is an easy way to improve the image of a firm. This is because such a program increases the amount of earnings per share, simply due to the fact that the amount of shares outstanding serves as the denominator in the equation below.

$$EPS = (Net\ Income - Preferred\ Dividends) / Shares\ Outstanding$$

Therefore, a firm's quarterly reports, as far as bottom line results, are improved and are often helped over the hurdle of analyst estimates on Wall Street[35]. While this is largely smoke

[34] ibid
[35] ibid

and mirrors, as the company must spend to purchase these outstanding shares which also has its own requisite effects, it often promotes sanguinity among investors and analysts who generally appreciate stocks that are able to consistently meet or beat estimates[36]. Of course, analysts themselves are quite savvy and many will utilize more nuanced models that must take into account numerous other factors, including taxation and other impactful factors. Nonetheless, as McKinsey studies indicate, there is very much ways to maneuver the figures in order to increase not only earnings per share, but indeed share price[37].

Balance Sheet	Before ($)	After ($)
Buying back $200m of Shares Scenario		
Cash	200	0
Operating Assets	580	580
Total Assets	780	580

Exhibit 2[38]

This impact is only amplified when accounting for tax impacts, as buybacks offer significant tax benefits, especially following the most recent tax reform in the United States[39]. However, the discussion of taxation of buybacks as compared to dividends remains a topic of

[36] Almeida, H., Fos, V., & Kronlund, M. (2016). The real effects of share repurchases. Journal of Financial Economics, 119(1), 168-185.
[37] Dobbs, Richard (2005) "The Value of Share Buybacks". *McKinsey Quarterly.*
[38] Author's rendering of information compiled: Dobbs, Richard (2005). "The Value of Share Buybacks". *McKinsey Quarterly.*
[39] ibid

much debate, notably with analyses suggesting equalization of tax rules might go quite a ways to quelling the overwhelming preference for buybacks[40].

Income Statement	Before	After
EBIT	134	134
Interest	6	0
Taxes	-42	-40
Net Income	98	94
Shares Outstanding	100	86.5
Share Price ($)	14.8	15
EPS	1	1.09

Exhibit 3[41]

Nonetheless, it is apparent from the base cases laid out by McKinsey, there is no increase in the value of a company even in terms of earnings before interest and taxes are included and the actual equity value of the company is reduced via share repurchases. Further, there is a decrease in net income despite a respite from some extra taxes. The loss in net income is additive to the issue of removed safety cushion and flexibility provided by a cash cushion, reflected in the 25% reduction in the balance sheet in the form of cash. However, the effect that is seen in terms

[40] Hemel, D. J., & Polsky, G. D. (2021). Equalizing the Tax Treatment of Stock Buybacks and Dividends. *Available at SSRN 3827117*.

[41] Author's rendering of information compiled: Dobbs, Richard (2005). "The Value of Share Buybacks". *McKinsey Quarterly.*

Data assumes cost of equity at 10%, cost of debt at 3%, and growth at 5%

of tax penalty and in the number of outstanding shares pushes upward both the share price and the earnings per share figures. Indeed, this example is exceedingly modest and conservative, as the actual analyses of share price increases, including those done by Two Sigma and other respected investment firms[42] that estimate the impact much higher. Indeed, even without the tax incentives factored in, it is likely that the share price has the potential to immediately increase as well, at least in the immediate term.

This heavily incentivizes buybacks that, coupled with the idea that management is confident in share appreciation that emanates through market sentiment, helps drive some share appreciation without actually improving the company or driving any organic growth or reinvestment in labor, etc.[43] In a sense, money is being reinvested into a company that is not actually reinvesting in anything other than its own share price and the benefit of lessened taxation on held assets. Of course, this is not a sustainable model of business and often rewards executive stock-correlated salaries in an outsized manner[44]. Further, as was established earlier, there is a signaling that is correlated in share repurchase announcements and a further amplification of share price appreciation upon quarterly earnings announcements that continue to meet Wall Street's expectations. As the Tax Cuts and Jobs Act of 2017 only amplified this effect in terms of tax shields[45], the manipulation of earnings per share and share prices has only been amplified, much to the chagrin of healthier balance sheets and more wary investors.

However, this is still a good investment from the perspective of management should share prices continue to increase, as the company's own investment in itself will be rewarded and

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[42] Street View Research (June 2019) "Buybacks: A Brief Investigation". *Two Sigma Investments.*
[43] ibid
[44] ibid
[45] Lazonick, et. al (Jan. 2020) "Why Stock Buybacks Are Dangerous for the Economy". *Harvard Business Review.*

the short term price appreciation begets a more accommodating voice from Wall Street. If such a program is employed opportunistically, it is a fantastic way to raise capital quickly and thereafter reinvest in the company itself, through such avenues as the aforementioned research and development. More importantly, it is indeed a great way to reward shareholders if used effectively and appropriately and, most of all, with some sense of opportunism when shares are actually undervalued rather than merely as a crutch.

The major problem with the strategy lies in the relatively widespread use of such programs in an inopportunistic fashion and the underlying incentives associated with it. Indeed, the potential for financial engineering and manipulation has been historically recognized, making the rise in buybacks a uniquely modern phenomenon. Indeed, until 1982 the topic of share repurchases provoked apprehension in board rooms as it subjected companies to scrutiny from the Securities and Exchange Commission who frowned upon such activity as stock manipulation[46]. Prior to the institution of this rule, dividends were the most utilized manner by which to return capital to shareholders, utilizing excess cash in order to do so. After the introduction of the safe harbor provision in 1982, dividends fell out of favor gradually.

[46] Thel, S. (2014). Taking Section 10 (b) seriously: Criminal enforcement of SEC rules. Colum. Bus. L. Rev., 1.

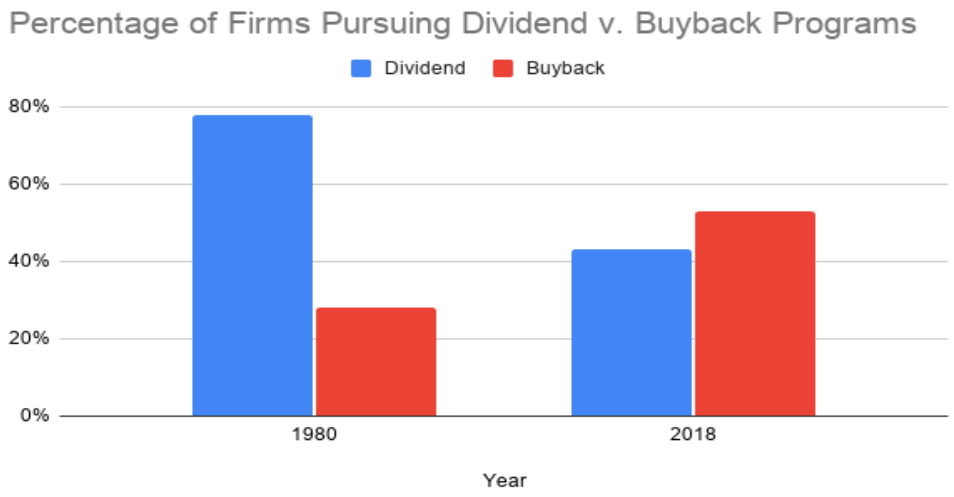

Exhibit 4[47]

The dynamic is notable as it shows a gradual changing of the guard in waves, but also because of the differing dynamics in how dividends affect the share price. Returning to the simple numerator and denominator of the share buyback, the dividend imparts the opposite effect. Dividends actually increase the amount of shares outstanding, which reduces the incentive to pursue them for the purposes of engineering that have been noted. As such, the implications of dividends are to provide shareholders value without necessarily "gaming the system", in fact to the contrary. Similarly, dividends are a far more consistent form of payouts historically, as the maintenance of a dividend over a long period of time is crucial to investors focused on dividend strategies. Share repurchases, given their opportunistic nature, are far more volatile and therefore given to short-termism much more than decades-long established dividend programs.

[47] Author's rendering of data compiled by S&P 500 research and NBER

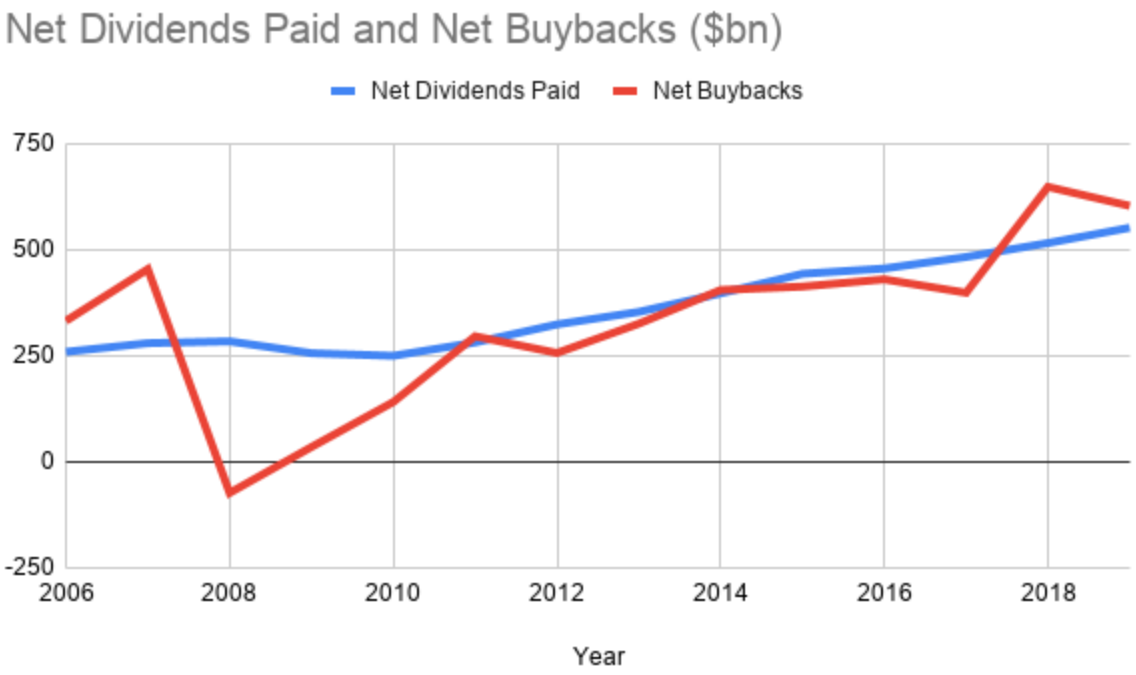

Exhibit 5[48]

To be sure, repurchases are preferable in that they are able to distribute excess cash more tax-efficiently than dividends, particularly after recent tax reform in the United States, aid in controlling effects of employee stock options, and offer more flexibility for firms. boost liquidity. Therefore, the growth in popularity might not be readily met with suspicion. Indeed, in context, there might be good reason as to why buybacks have become a dominant aspect of the corporate strategy among S&P 500 firms, especially in the years following the financial crisis.

[48] Data aggregated from Federal Reserve Bank of St Louis, S&P. Accounts for equity issuances, which also highlights higher flexibility.

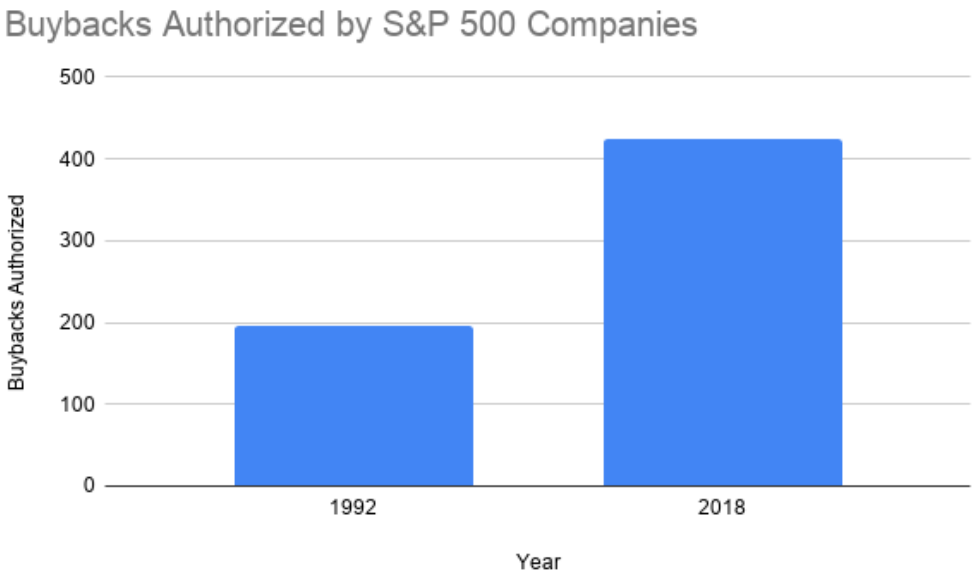

Exhibit 6 [49]

This should be of concern to those monitoring the overall stability of firms, as the shift to buybacks is perhaps motivated by this incentive to engineer somewhat, sacrificing some capital that might act as a bulwark on the balance sheet in pursuit of inorganic financial results. This can quickly snowball as it does not provide the check and balance that is seen in the review of dividend dynamics, previously pre-eminent among shareholder return packages. On the back of this behavioral incentive is the fact that the total amount of firms pursuing buyouts has not only dwarfed the prior institution of dividends, but has become a significant strategy added to firms continuing to pursue dividends in order to further placate a hungry shareholder base that has come to expect such reward over the span of time since 1982.

Indeed, scholars have studied the topic of buyback effects on share mechanics since that initial legal shift extensively, both with regards to dividends and on policy more broadly. Notable research includes Barclay and Smith's review of dividends[50] versus buyback mechanics as

[49] Author's rendering of data compiled in: Nathan, Allison (2019) Top of Mind: Buyback Realities. *Goldman Sachs Investment Research.*

[50] Barclay, M. J., & Smith Jr, C. W. (1988). Corporate payout policy: Cash dividends versus open-market repurchases. *Journal of Financial Economics*, *22*(1), 61-82.

already discussed and Wiggins' analysis of liquidity impacts[51], among others. Even in the first decade after the rule change, there was notice among many academics that the newly unconstrained mechanism was augmenting the bid-ask spreads on publicly traded stocks. While some debate persisted about the actual effect, and particularly about the magnitude of the effect when compared to the previously more popular tender offers, there was an effect on the bid-ask spread and therefore the immediate share price in nearly every analysis[52]. While major empirical studies like that conducted by Ikenberry, et. al[53] suggest that the reaction may be overestimated, there is still a noticeable effect that specifically reflects the signaling effect of undervaluation around repurchase announcements and thus their usefulness to corporate management.

However, the phenomena of surging buybacks is even more recent than the initial regulatory allowance and long term trends emanating from 1982 would suggest and post-dates the noted research exploring the topic from the nineties. According to recent studies about 70% of total historical buyback activity has come since the Great Recession, reaching a crescendo to the extent that about half of all activity came in the five years prior to 2020[54]. While the lead up to the financial crisis saw a serious boom in buybacks, the time since the 2009 nadir has been unparalleled, eclipsing that prior record easily[55], topping metrics in terms of usage of free cash and even beyond use of available case, a topic that will be revisited later.

In line with the issues of stability cited in Minsky's work and the behavioral corollary cited thus far, the rationale for the recent surge might not be rooted in the most becoming

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[51] Wiggins, J. B. (1994). Open market stock repurchase programs and liquidity. *Journal of Financial Research*, *17*(2), 217-229.
[52] Comment, R., & Jarrell, G. A. (1991). The relative signalling power of Dutch-auction and fixed-price self-tender offers and open-market share repurchases. The Journal of Finance, 46(4), 1243-1271.
[53] Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. *Journal of financial economics*, *39*(2-3), 181-208.
[54] Cole, Edward (2019) "Stock Buybacks: Freeing the Invisible Hand, or Legitimising the Fat Finger". *Man Institute.*
[55] ibid

incentives. Perhaps most dubious among these is the conjecture among many, not least of which is former Harvard professor William Lazonick, that a large impetus behind such programs is a desire to meet thresholds for stock option grants that boards utilize to pay executives[56]. This is not merely a hyperbolic prescription of dubious motives to executives either, as a report from the SEC itself noted a consistent pattern of cashouts among executives upon announcements of share buyback plans that would requisitely provoke a positive market reaction[57]. The evidence of market reaction will be revisited in more depth, along with case studies on the signaling, later within this paper.

That said, it is the latter factor that is the ultimate catalyst, i.e. the ability of these announcements to provoke such a reaction that then baits board and executives onward to increase authorizations and chase the sustained rally in equities. Further, the actions appeared to ease investor concerns about appropriate capital preservation. While the rationale cited is by no means universal or univariate, its rationale has correlational evidence and, crucially, is in line with the dynamics predicted by Minsky's hypothesis as it relates to lending practices.

Additionally, this is apparently a risk to stability recognized by regulators, as the Federal Reserve itself issued a moratorium on stock buybacks among banks in its system in 2020 to alleviate such a risk[58]. In the report from the US central bank, the board noted that a majority of firms reduced buyback programs to near zero from a previous fever pitch, citing the "uncertainty in the economic environment" as the catalyst to curb unnecessary expenditure[59] and

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[56] Lazonick, W. (2014). "Profits Without Prosperity: Stock Buybacks Manipulate the Market and Leave Most Americans Worse Off." Harvard business Review.
[57] Jackson Jr, R. J. (2018). Stock buybacks and corporate cashouts. *speech by Commissioner Robert Jackson at the Center for American Progress. Securities and Exchange Commission*.
[58] Board of Governors of the Federal Reserve System (2020, June). *Assessment of Bank Capital during the Recent Coronavirus Event.* FRB.gov
[59] ibid.

negatively impact capital position. As such, the board restricted share repurchases among banks to similarly act as a bulwark against any added risk to the overall financial system. In fact, it was the first recommendation of the board, which also noted the elevation in share repurchase and dividend distribution prior to the coronavirus crisis that shook equity prices and threatened to make such programs pay quite the opposite of dividends for the firms pursuing such strategies[60]. In short, the health of the banking system stood to be affected negatively by repurchases to the extent that they were banned by the central bank of the United States as a primary step after stress testing.

Therefore, the risk to balance sheets specifically, and systemically as the Federal Reserve suggests, is evident and, arguably, a larger concern than the oft-examined issue of opportunity costs associated with these programs.

4. Buybacks Abet the Bull Run?

However, while the overall stability idea is important and a crucial aspect that will be revisited in later chapters of this thesis, the trajectory of the behavioral corollary must be established as well. On this aspect, the evidence over time in terms of the buildup in buyback programs has already been established. However, there is a larger question of whether this has itself abetted the longest bull market run for equities over this specific and unprecedented period and, if it has, to what extent.

Indeed, the explosion in buybacks was accompanied a similarly unparalleled bull market run in equities, suggesting a degree of correlation in the behavior of executive boards who might have come to see the use of excess cash, and in many cases even debt, to chase seemingly

[60] ibid

promised returns under the illusion of a new paradigm in stability provided by evermore aggressive policymakers. Perhaps additive in effect is the dominance of passive investors in the market[61], many of whom are potentially turning a blind eye to the aforementioned risks.

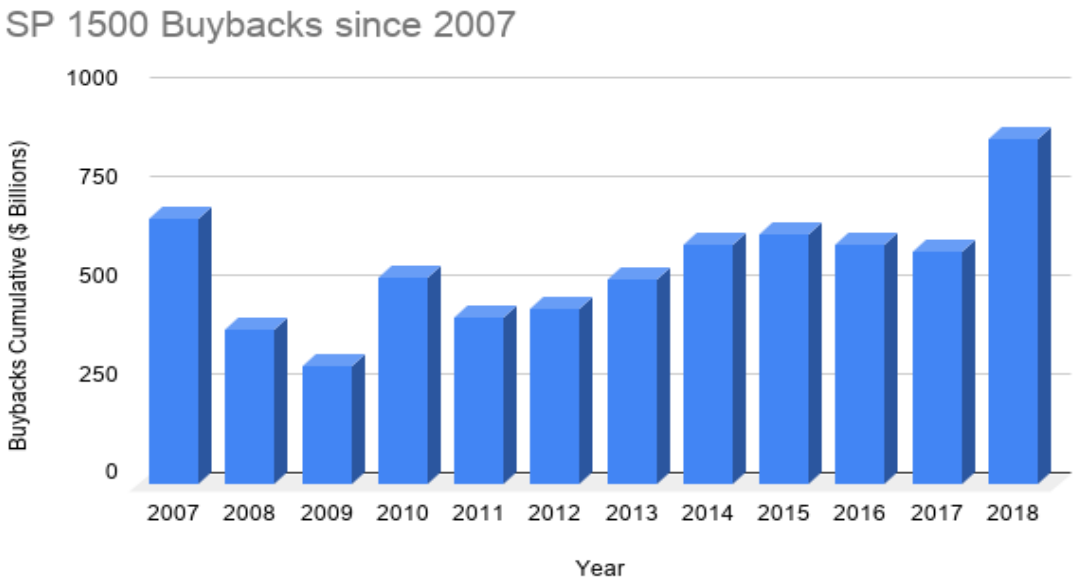

Exhibit 7

The question of whether the buybacks promoted continued share appreciation, as longer term engineering is certainly difficult to maintain, or if many buyback authorizations were simply chasing the market as it lifted off from the ashes of the financial crisis[62].

Of course, at first, a simple superficial glance would give one the impression of correlation, especially in S&P 500 returns that rose rather consistently, alongside buybacks, in the recovery from the Great Financial Crisis.

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[61] Anadu, K., Kruttli, M. S., McCabe, P. E., & Osambela, E. (2020). *The shift from active to passive investing: Potential risks to financial stability?* SSRN

[62] Zeng, L., & Luk, P. (2020). Examining Share Repurchasing and the S&P Buyback Indices in the US Market. S&P Global.

Simply by raw dynamics, the rise in buybacks has been directly in tandem with the market cycle, indicating its pro-cyclical trend. This is not simply a trend seen in the last market cycle, but has been relatively consistent in the previous market expansions as well.

Exhibit 8[63]

Most notably, share repurchases reached a fever pitch in the expansion from 2002 to 2007 before arguably aiding in the implosion sparked by the mortgage crisis and more grossly ponzi behavior in derivatives surrounding that industry. Nonetheless, despite its at best peripheral contribution to 2008's cataclysm, the peak of the crisis was also the peak for buybacks until just prior to the coronavirus pandemic, a factor of fragility therefore worth noting as consistent.

However, it moves beyond simply a superficial correlation, as statistics show that US corporations were themselves the market moves over the course of the decade. Indeed, large cap US companies distributed an average of 87% of their net income as dividends and buybacks in the decade after the Great Financial Crisis, about 15% above historical norms[64]. In fact,

[63] Share price data sourced: Yahoo finance historical share price data
[64] Baker, A., Haslam, C., Leaver, A., Murphy, R., Seabrooke, L., Stausholm, S., & Wigan, D. (2020). *Against hollow firms: repurposing the corporation for a more resilient economy.*

according to Goldman Sachs research, corporations themselves embarking upon repurchase programs easily exhibited the highest net demand for US equities, piling about $5.6 trillion into their own shares through these programs, leaving a net demand of over $4 trillion in the decade.

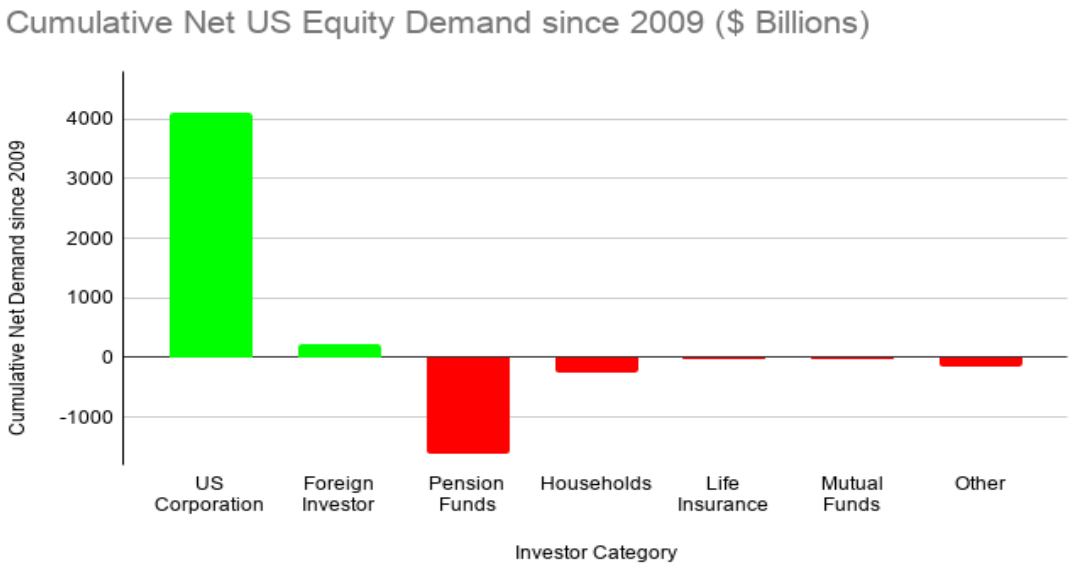

Exhibit 9[65]

In fact, across many sectors more was piled into share buybacks than firms made in profits over the course of that decade[66].

As might be expected given their pro-cyclical nature, the pullback in buybacks immediately followed with the market cycle as it entered recession in 2008 and remained muted throughout, missing actual undervaluation that might have been seized upon sans overaggressive buyback programs during the prior bull-run. The vast majority of buybacks are indeed pursued during the late stage of the cycle, as Minsky's premonitions suggested.

While Goldman's report attempts to throw cold water on the idea of the market being buyback driven, it notes that buybacks are responsible for at least 11% of the overall compound

[65] Adapted from Goldman Sachs Investment Strategy Group: US Flow of Funds, Exhibit 44
[66] ibid

annual growth seen over that time frame[67]. Even by these conservative estimates, that is not an entirely insignificant contribution, especially when put into the overall jump in equity valuations in absolute terms over the course of these years. However, it is indeed a conservative estimate from the financial institution given comparative reports from other banks and research houses.

As a point of reference, Ned Davis Research, a research house that performed a thorough and dynamic analysis of the S&P 500 returns both with buybacks and excluding buybacks[68]. From this, the team found that the S&P value would have been 19% lower without buybacks at the close of 2018. Of course, there is an implicit assumption that the cash allocated to buybacks are not invested in other parts of the business or held as cash[69]. Still, even if dividends are pursued rather than buybacks, indices would have closed the year 10% lower than the record levels reached[70].

Regardless of the conjecture of mitigating factors and the total additive effect that buybacks promote, there is most certainly a dearth, if not an outright non-existence, of studies suggesting an insignificant effect of these programs. The conjecture is much more over the scale of the effect and mitigating factors that might enlarge or otherwise shrink the cumulative effect and whether or not it is ultimately a positive or negative impact on equity markets. As cited above, credible studies put the additive effect comfortably in the double digits, becoming the crucial buyer of equities that continue to push upward and expand multiples beyond what historical earnings growth would suggest is reasonable.

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[67] ibid
[68] Clissold, E. (2019) “A dynamic analysis of buybacks”. *Ned Davis Research.*
[69] ibid
[70] ibid

Case in Point

The signaling impact that many corporate boards see is best demonstrated within a case study, both in terms of the signaling effect that has been alluded to upon an announcement and upon the actual pursuit of the purchases pre-announced. Signaling is a topic well discussed in the literature on a broader level, e.g.Wansley et al.[71], Vermaelen[72] , Baker et. al[73], and Tsetsekos et al.[74]. Many of these studies arrive at the same basic conclusion, that the posturing of these programs in terms of signaling that shares are undervalued aid in carrying investor confidence and provoke positive response among the investment community that is, typically, subsequently met with positive price action that is additive to the supply and demand dynamics of shares that undergird the mechanistic impact.

The mechanistic effect of even buyback announcements becomes obvious when citing anecdotal examples, which notes the behavioral dynamics before repurchases are even pursued. According to high-tech hedge fund Two Sigma, the announcement of a buyback shows a positive market response, with excess returns just under 1% in the month immediately following a buyback announcement[75]. The data compiled by the firm also noted a bifurcation in share buyback dynamics between time frames prior to and following the Great Financial Crisis.

Crucially for the purposes of this paper, the buildup is weighted towards the late cycle as companies appear to increase their bullishness in buybacks pro-cyclically, which is indicative of Minsky's finding on longer term returns and placidity in markets promoting more general

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[71] Wansley, J. W., Lane, W. R., & Sarkar, S. (1989). Managements' view on share repurchase and tender offer premiums. *Financial Management*, 97-110.
[72] Vermaelen, T. (1981). Common stock repurchases and market signalling: An empirical study. *Journal of financial economics*, *9*(2), 139-183.
[73] Baker, H. K., Powell, G. E., & Veit, E. T. (2003). Why companies use open-market repurchases: A managerial perspective. *The Quarterly Review of Economics and Finance*, *43*(3), 483-504.
[74] Tsetsekos, G. P., Kaufman Jr, D. J., & Gitman, L. J. (1991). A survey of stock repurchase motivations and practices of major US corporations. *Journal of Applied Business Research (JABR)*, *7*(3), 15-21.
[75] Street View Research (June 2019) "Buybacks: A Brief Investigation". *Two Sigma Investments.*

comfort with otherwise speculative behavior. Indeed, buyback programs appear to only increase in line with broader market gains and amplify in late cyclewhen examined via multiple correlation tests. However, this also correlates with overall corporate debt levels since 2000, which will be revisited later.

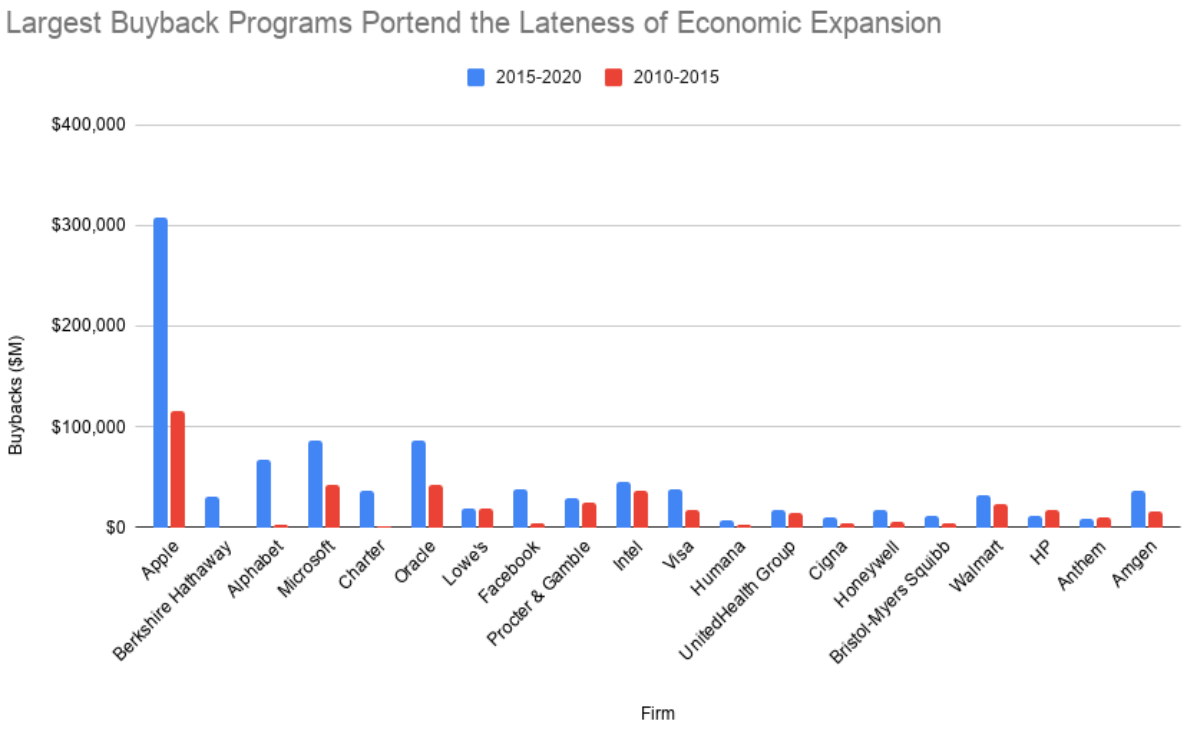

Exhibit 10[76]

Incorporating multiple factors, from the direct, mechanistic shift in shrinking the amount of shares in circulation and thus improving earnings per share numbers on quarterly earnings announcements and maintaining an image of strength, to the more subjective signaling to the undervaluation of shares to an investment community which has proven to respond kindly to such announcements, there is certainly wiggle room to these estimates. The crucial detail is that

[76] Silverblatt, H. (2020) S&P 500 Q3 2020 buyback and related data. *S&P Dow Jones Indices*.

each analysis notes that these two effects in tandem have a not insignificant impact and one that many authorizing such actions can surely recognize.

Again this is worthwhile to examine at a firm level to understand the board's behavior in both announcing and pursuing share repurchase programs.

Qualcomm

One of the clearer uses of a buyback to signal strength that is ultimately illusory would be Qualcomm's pursuit of a $30 billion buyback program after being denied the chance to acquire Dutch semiconductor competitor NXP Semiconductor by Chinese regulators[77]. This is a particularly strong sign of signaling because the move to authorize such an outsized share buyback program was explicitly done in order to shore up confidence in the company as it moved forward as a stand-alone entity. Indeed, there was well-founded fear among the board that there might be an activist investor issue should action not be taken to shore up the share price, especially as the firm dealt with lingering legal issues with Apple, whom it supplies chips to.

Regardless of the minutia behind the decision to pursue the program, the move was a clearly effective signal sent by management in the immediate term. Indeed, beyond the immediate mechanistic effects that are shown as the supply of shares is thinned, the market clearly picked up on the signal as volume spiked on the announcement alone as well as the periodic updates provided by management.

[77] Ma, J. D. (2020). From Windfalls to Pitfalls: Qualcomm's China Conundrum. In *China's Economic Arrival* (pp. 49-70). Palgrave Macmillan, Singapore.

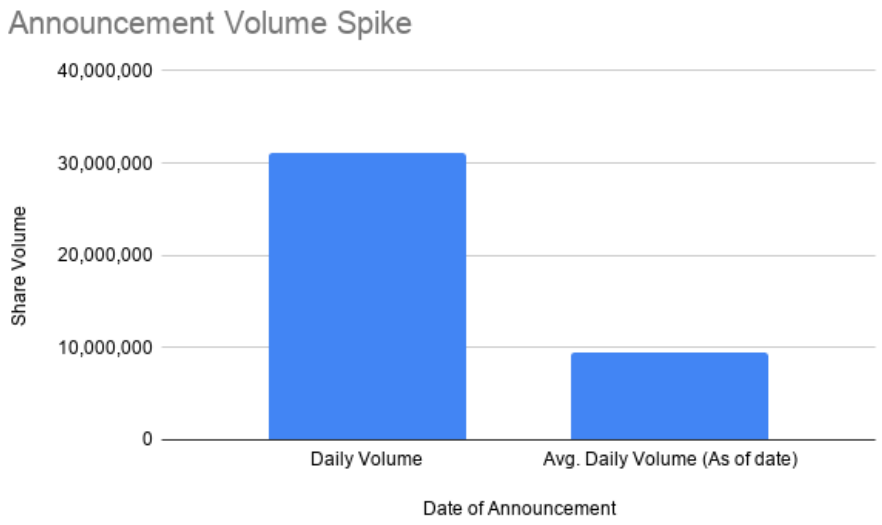

Exhibit 11[78]

In fact, average daily volume spiked providing a just over 7% jump in share price over the course of two days (pertinent given the announcement made at Pacific time and the trading day's Eastern bias) and aided in promoting share appreciation of nearly 20% for the quarter. Otherwise, given the crash and burn of what would have been a blockbuster deal, one might have expected share prices to decline. Indeed, the large purchase appeared to reward the conviction of management, in contrast to some prior programs that had not worked quite as well.

While the purchase thus appears opportunistic in this lens, as the appreciation in shares proved management's judgment prescient, it creates a chicken and egg issue. As management was clearly attempting to promote confidence, their show of confidence may have been a self-fulfilling signal to the market, as much of the existing literature argues. Further, it showed that a larger signal was key to generating the type of reaction that is desired in pursuing such a

[78] Daily trading volume sourced: Yahoo Finance. Author's calculation on average daily volume.

program. Thereafter, management is encouraged to continue programs and indeed accelerate the purchases, as was done in the case of the subsequent quarters for Qualcomm.

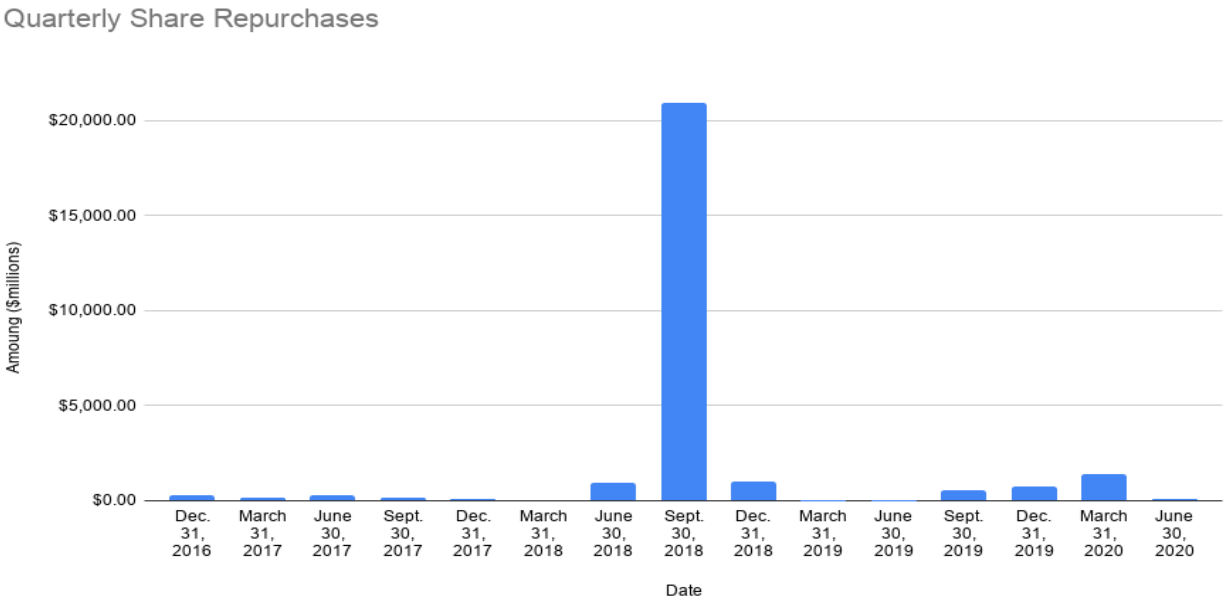

Exhibit 12[79]

Overall, this is not a major issue in principle. The main issue is the accelerated pace at which the buyback program was pursued and the weakened balance sheet left behind at a time when Qualcomm was in a situation where numerous risks still confronted it. After all, over $10 billion remaining on the balance sheet retains a firm position amidst potential troubles, even if the buyback program might have been quite ambitious and out of character.

Indeed, in prior years, Qualcomm's pursuit of its buyback program might conform more with Minsky's hedge finance definition, being careful not to overextend and maintain adequate working capital to innovate in a quite capital intensive industry. As one can see from the chart

[79] ibid

above, the prior $5 billion and $10 billion programs authorized after the Great Financial Crisis were pursued piecemeal and deployed rather judiciously.

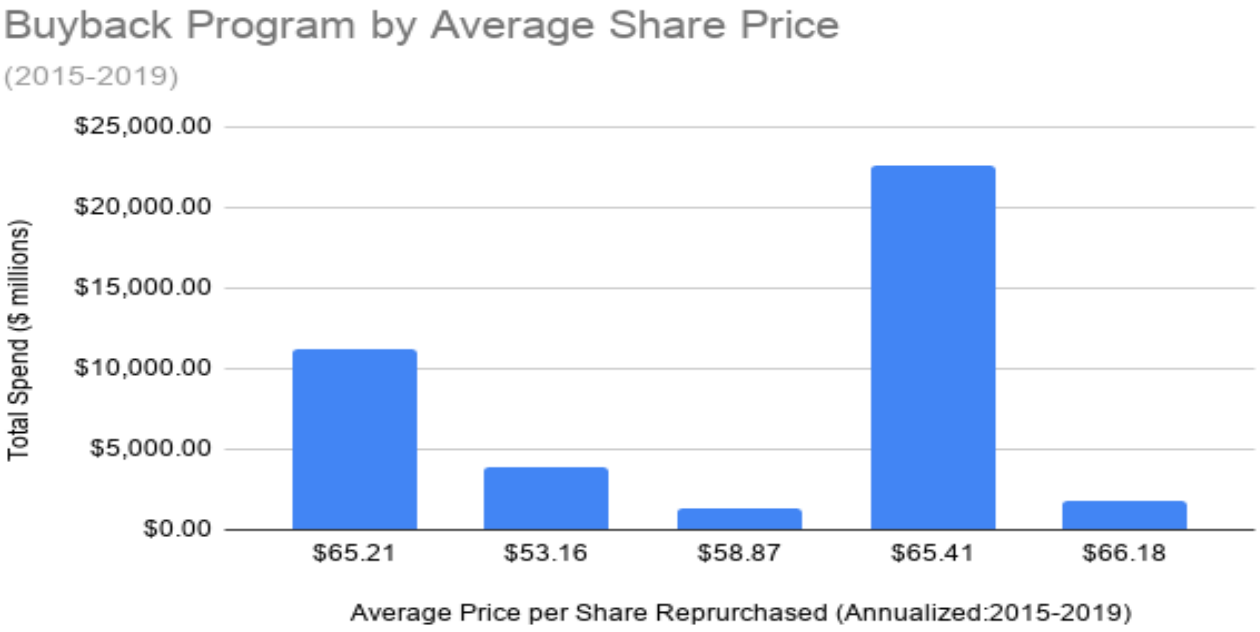

Exhibit 13[80]

Crucially, they allowed Qualcomm to continue to build capital to put toward investment, potential acquisitions, and other fruitful activities. By contrast, the more aggressive late cycle program actually reduced free cash to just one third of its prior peak and, in many instances. The reduction in cash, coupled with debts on the balance sheet even encouraged auditors to put warnings on 10-K filings following 2018, noting that the company's large outstanding debt coupled with a reduced cash pile could be a concern large enough to threaten the overall business should conditions change in regards to the credit rating or operating conditions.

[80] Data sourced: SEC EDGAR system, Qualcomm 10-K filings. SEC.gov

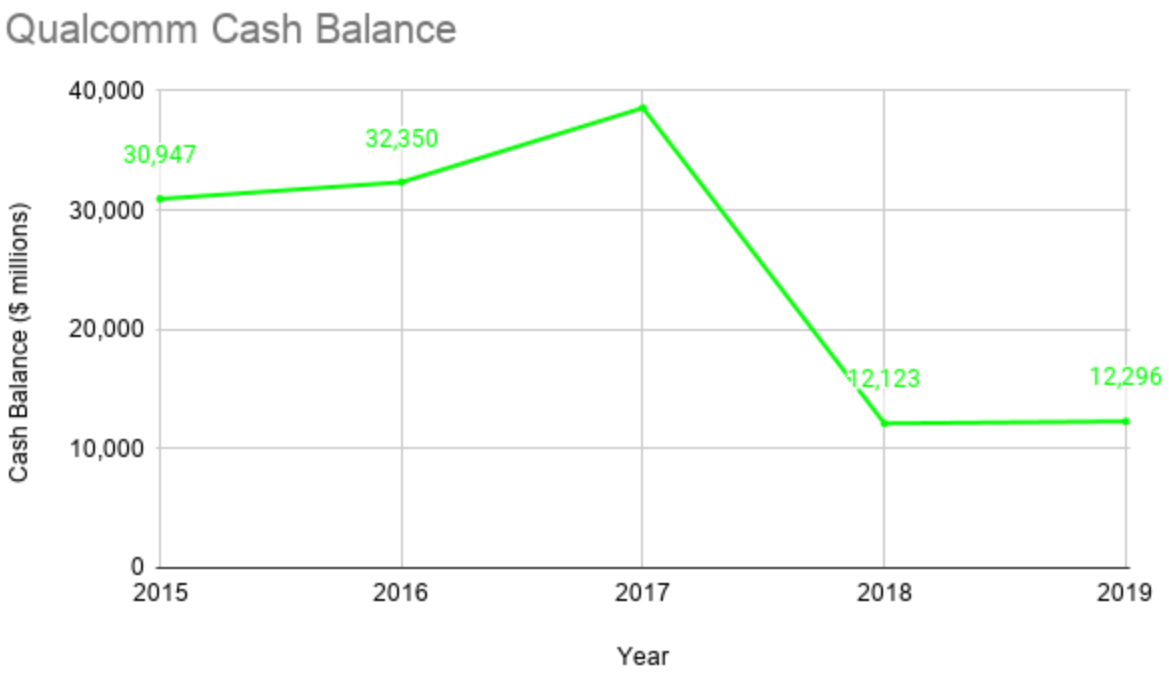

Exhibit 14[81]

Nonetheless, Qualcomm is a better example of how a large signal can abet a stock price's ability to push higher as confidence exuded by management only adds to the mechanistic impact on share dynamics and trickles into the public investment psychology. In fact, it offers an example of how larger signals work more effectively and might beckon management to be more aggressive in future. Given the firm still sat atop billions on its balance sheet, it is by no means a poster child for ponzi behavior and likely merely falls on the low-end of the speculative stage of Minsky's ideation. Still, despite the availability of cash to Qualcomm, many of the programs for share buybacks and maintenance of the firm's dividend were financed by debt issuance, which is a subject that will garner more pointed attention later within this paper. In this regard, the seeds of undue speculation could certainly have been planted.

[81] ibid

Overall the test case is very instructive, as one must recognize the firm level reaction over an extended bull market that would most certainly be picked up upon by executive management and corporate boards looking to beef up their share price, for whatever means. In the case of well capitalized firms or firms that are genuinely taking advantage of a market disconnect and undervaluation of shares, this is not necessarily a major issue. Yet, for the less fortified balance sheets, it does create an environment in which the blow of unexpected impacts, such as a sharp market downturn, especially in the case of the extreme, exogenous shock during the coronavirus crisis of 2020 cannot be sustained.

In this sense, balance sheets that might have otherwise been a fortress if capital was preserved more carefully and held in order to be resilient to the challenges of macroeconomic, geopolitical, or medical cataclysm are weakened to the point that they become highly vulnerable to such events. In the latest case, to the point of insolvency. Put more poetically, it is not the buybacks that broke the firms, but rather the thing that made them more fragile and thus susceptible to a solvency crisis in many cases.

5. Imbalancing the Balance Sheet

As has been hinted at, not least in the test cases, is that a major effect of overdone buyback programs is their proclivity to amplify downside effects and leave these companies pursuing programs with more diminished balance sheets, especially after pursuing buybacks at the most bullish rate near market tops. While prior to the financial crisis firms typically pursued buyback programs following large scale selloffs or were otherwise utilized to mute undue volatility in a share price and signal confidence, tht predictability has faded following the crisis. Indeed, data compiled by Two Sigma has shown that extended gains and stronger returns by shares over a two to three year period was actually much more highly correlated with the pursuit

of share buybacks in the post-crisis era[82] through multiple levels of regression over multiple time periods.

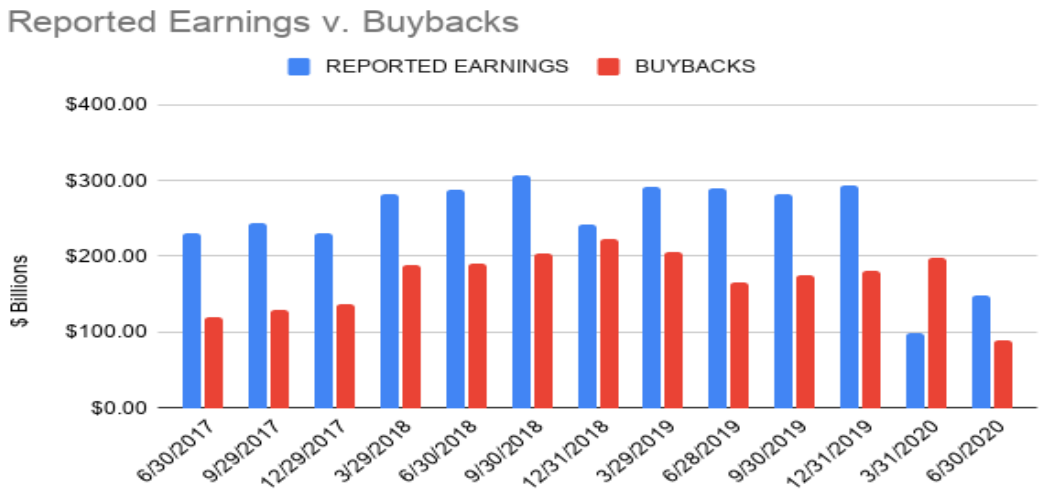

Exhibit 15[83]

As such, corporations were shown to broadly chase positive returns rather than utilize buybacks to mute downside risk as had been the modus operandi in the past[84]. Similarly, the value stocks that had been traditionally targeted for buyback programs faded from the forefront of these programs, with firms apparently taking little heed of valuation and opportunism in repurchases that were more persistent in prior observed periods[85].

As is evidenced, buybacks serve as a significant backbone of company strategy, but can easily fall out of step with earnings and then run afoul of its intent to signal undervaluation. This suggests a sort of "buy high" behavior that is not conducive to the goal of the programs and the

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[82] Author's rendering of data sourced from S&P Dow Jones Indices and buyback and related data compiled by S&P Global Intelligence.
[83] ibid
[84] Street View Research (June 2019) "Buybacks: A Brief Investigation". *Two Sigma Investments.*
[85] Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. *Journal of financial economics*, *39*(2-3), 181-208.

oft-stated strategy of poaching undervalued shares. Indeed, buybacks peaked in early March, reaching their highest point prior to the 2018 rate hike cycle that stoked some concern on the practice[86]. Indeed, as shown by reported buybacks peaking in a quarter bookended by the largest pullback and most rapid in equity prices since the Great Financial Crisis, sparked by coronavirus' forced closure of swaths of the global economy, buybacks can often peak at precisely the wrong time and then leave firms without proper capital on the balance sheet to actually take advantage of the recovery. In fact, to the more extreme consequence, many of the companies pursuing buybacks most aggressively within the confines of the protracted bull market were among the quickest to call for bailout programs from the government as they lacked a strong enough balance sheet to withstand a major crisis.

Contrary to the pre-Great Financial Crisis era of share buybacks wherein share buybacks were utilized to mute volatility and opportunistically purchase shares after a short period of declines, the post crisis era has tempered this trend. Instead, many buybacks can follow strong performance in share prices rather than shoring up a share price amidst increased volatility or a significant selloff. Per multivariate regression analysis and logistic regressions on buyback announcements performed by Two Sigma, there were noticeably larger negative returns relative to average for the period before the Great Financial Crisis than thereafter[87].

In terms of Minsky's point of view, the pro-cyclicality and increase in buyback programs is the process of moving from hedge programs towards speculative measures as the bull market seems to carry on. It would seem that the very persistent nature of price increases in shares of most companies continued in the post-crisis era, especially as accommodative Federal Reserve

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[86] Feldstein, M. (2018). Why is the Fed still raising interest rates?. *Project syndicate*.

[87] Street View Research (June 2019) "Buybacks: A Brief Investigation". *Two Sigma Investments.*

and fiscal policy supported a protracted bull run, pushed many firms along the risk curve. In some cases, this created solvency issues in the wake of the coronavirus crisis that might have otherwise been averted.

Of course, the progression towards an imbalance balance sheet is also most visible on an anecdotal level. The broader data sets and tandem moves in buybacks alongside soaring equity returns, along with the aforementioned dynamics that establish these moves as correlated, are observed from a bird's eye view, the important lessons in corporate governance are perhaps better gleaned from sector and, more pointedly, a firm-level perspective.

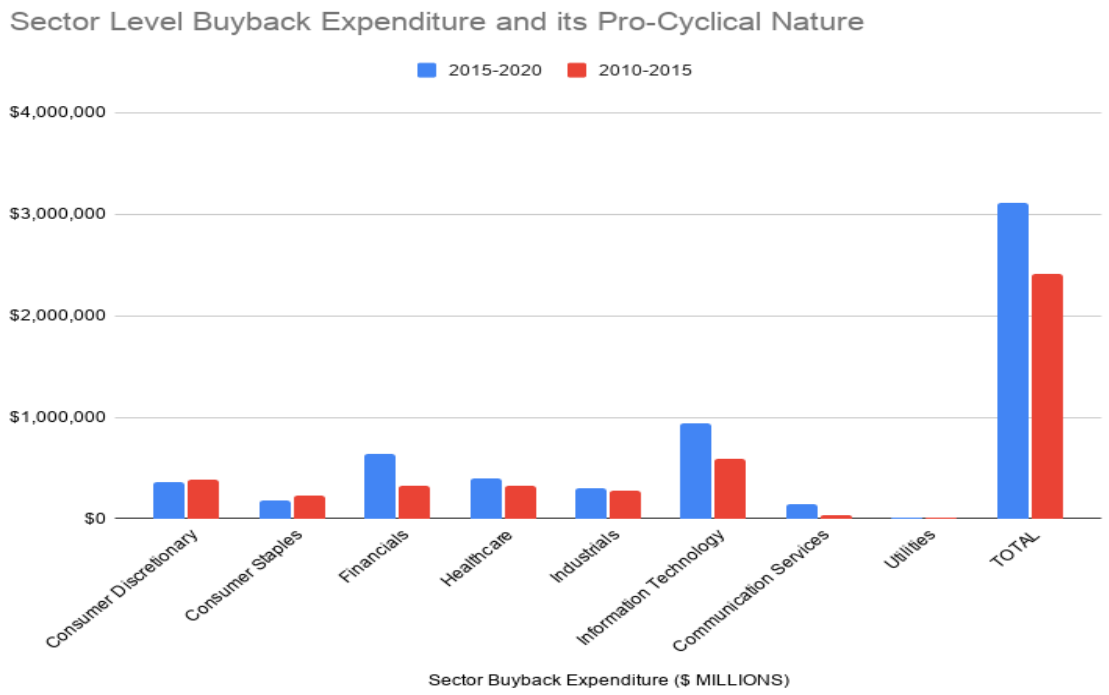


Exhibit 16[88]

In observing the firms that were most eager to pursue buybacks, the Standard and Poor's buyback index[89], which sought to expressly take advantage of the aforementioned dynamics in

[88] S&P 500 Buyback Data 2010-2020. S&P Global. Author's calculation and selected sectors.
[89] S&P 500 Buyback Index. S&P Global Intelligence.

buybacks returns to shareholders, is an ideal place to start. Information and technology, an industry growing at a rapid pace, is well-represented in the compiled indices and maintains the largest share of buybacks over the decade, led by the overwhelming leader in share repurchases, Apple[90]. The massive level of buybacks within this sector most certainly jump-started the trend in tandem with the sector's rapid ascent in share prices more broadly. This is significant to observe because the prior period in which information technology companies had led in both returns and buyback proclivity was shortly prior to the Dot Com Bubble[91].

Further, and crucially for the purposes of this review, many of these firms helped lead broader market indices upward, fomenting an irrational continuation of evermore speculative programs as prices rose. Indeed, the S&P buyback index continually led the benchmark S&P 500 index in terms of returns in the post-crisis period, notching consistent calendar-year returns above its benchmark. However, the index crucially amplified downturns and in the two years that it did not beat its benchmark, it amplified the losses significantly, displaying the volatility and potentially imbalancing effects of the programs.

This was notable particularly among industrial companies which had lessened resilience to the downturn. Whereas technology companies may indeed benefit from many aspects of the pandemic's effect on daily life, many industrial companies and other, less nimble or modern firms had less room to maneuver. Industrial companies are also among the firms most correlated with buybacks as a primary driver of their returns over the past decade, particularly those counting themselves as major Dow 30 components. The issue is that the debt levels among

[90] ibid
[91] Brennan, P. (2020) "Era of buybacks under threat as rising debt meets politics, ESG". *SP Global Intelligence*

industrial companies rose significantly in the period following the financial crisis along with the significant rise in buyback programs.

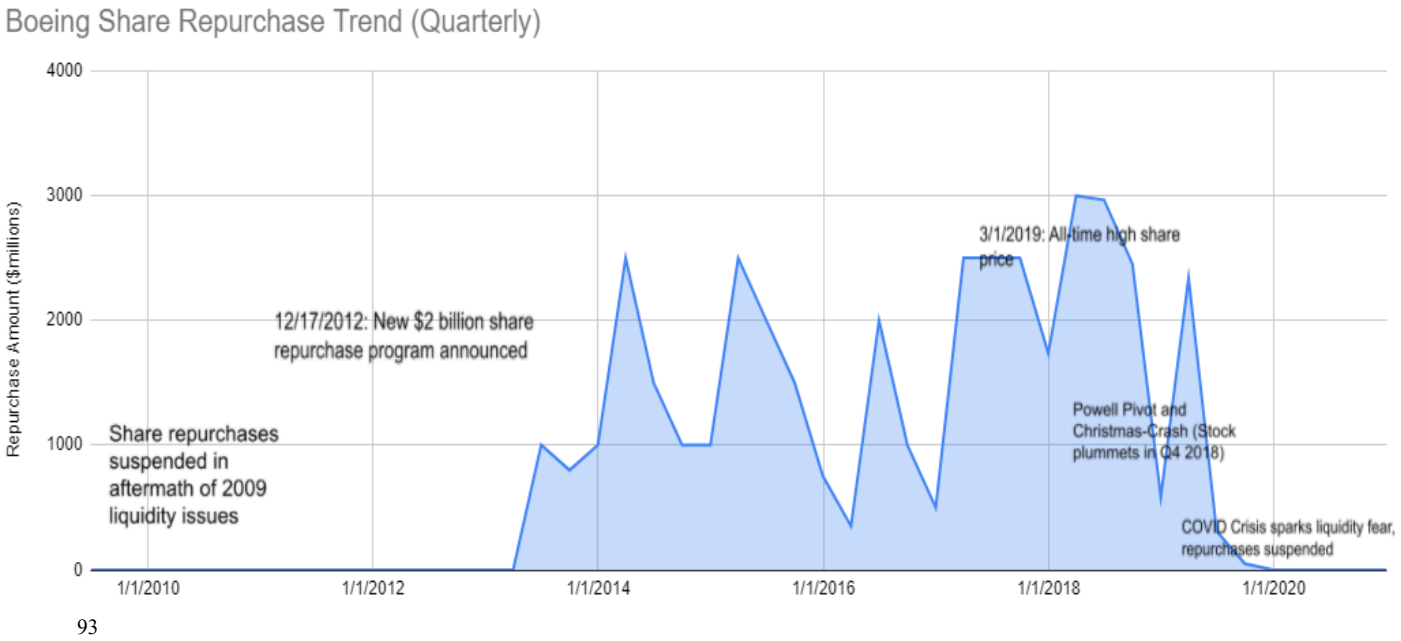
Of course, many of these firms composing in the index eventually found themselves in crisis during the COVID-19 pandemic that necessitated governmental assistance. The latter will be scrutinized in greater detail later in this paper. Nonetheless, it is useful to observe firm level test cases and divine the Minsky-esque psychology that continually rising share prices and placid market conditions create, ultimately aiding in greater destabilization in the event of a crash catalyst coming to the fore.

Case in Point

Boeing Corporation

Boeing is a prime example of the correlative effect of buybacks in promoting stock prices, not only in terms of its own stock price, but its status as the largest Dow Industrials (DJIA) component by weight for a number of years following the financial crisis. As such, Boeing was an outsized market indicator that investors looked to, amplifying its share repurchase impact more broadly into the realm of investor psychology[92].

[92] Nofsinger, J. R. (2017). *The Psychology of Investing*. Routledge.



[93]

Exhibit 17[94]

Again, when compared with the chart of equity performance, the pro-cyclicality of such programs is readily visible, as is provided below courtesy of Nasdaq chart data and indeed, the comeback in share price seen in late 2020 into 2021 is in large part driven by a cash infusion to a balance sheet that had become bereft after pouring over $40 billion into buyback programs that proved a wise investment for a time, but ultimately left a balance sheet completely imbalanced. Indeed, this is a topic that will be revisited in more detail later in this paper. The crucial aspect to understand at this time is the correlation to stock performance, by way of the mechanistic movers already covered, and the self-fulfilling behavior this foments.

[93] Share repurchases sourced: SEC.gov EDGAR system. Author's annotations.
[94] Quarterly Expenditure in Appendix.

Exhibit 18[95]

Additionally, when looking closer at the average cost per share of the program at its peak, late in the cycle, indicates further the pro-cyclicality of the program in Boeing's case that was bade forward until a final point in which the share price plummeted. As such, the arguments about stabilizing volatility, taking advantage of undervaluation, and other ancillary arguments appear to not hold merit in the post Great Financial Crisis decade.

The example of Boeing is also instructive because the buildup in buybacks was also largely unabated by crises with the products that Boeing itself produces, namely within its troubled 737 MAX 8 jets[96]. As Lazonick would have noted, the buyback programs that totaled over $40 billion in the course of the post-crisis decade came at the expense of the safety of its product, which caused two major crashes in late 2018 and early 2019. However, instead of cutting back on repurchase programs in order to address these key issues, the repurchase program was reinvigorated with the company authorizing a stunning $20 billion repurchase

[95] Data: Nasdaq daily share price chart
[96] Ford, J. (2019, Aug. 4). "Boeing and the siren call of share buybacks" *The Financial Times.*

program in December 2018, fueling a renewed rally in shares that defied potential debt issues that were exacerbated at the time by a tighter monetary policy pursued by the Federal Reserve. The late December signal did appear to assuage concerns in the first quarter of 2019, aiding in the share price's push to an all-time high less than six months after a catastrophe.

Also, the major repurchase program drained on the company's cash balance, as reflected within the average purchase price of the buyback program denoted in company filings in the resurgent program.

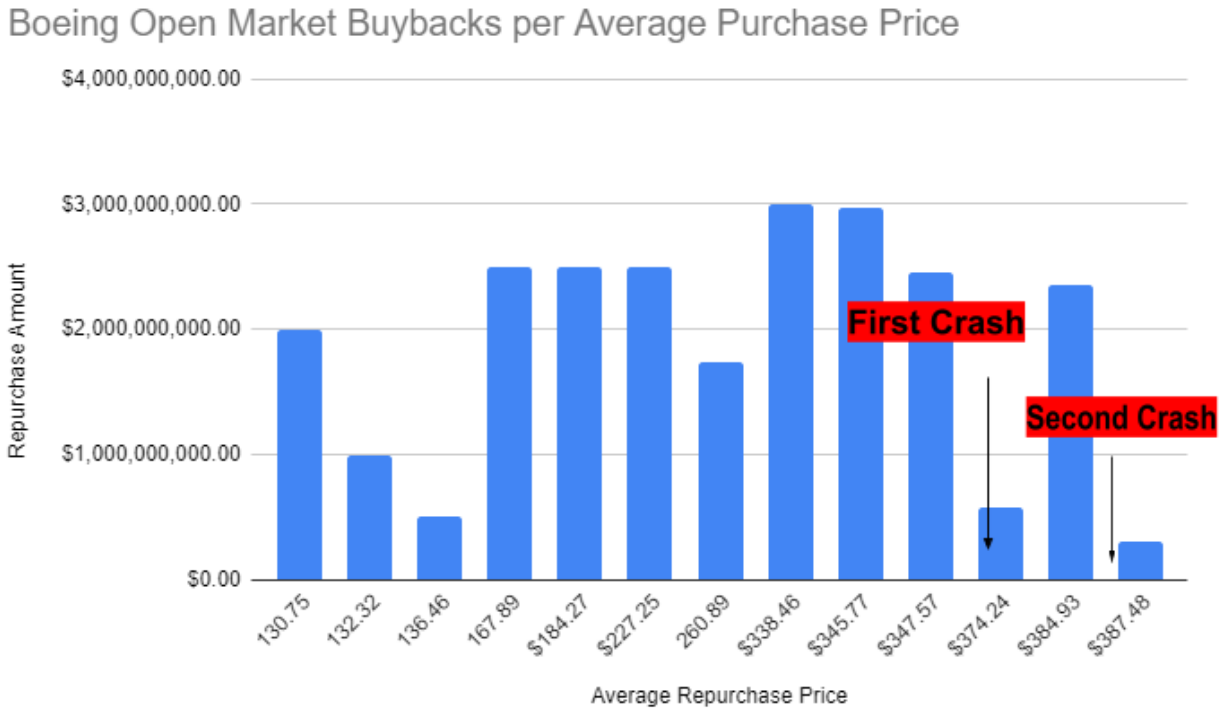


Exhibit 19[97]

Indeed, the program proceeded despite many warnings of investment needed elsewhere, retreating only momentarily in the immediate aftermath of major events. In helping drain on the company, it propelled added concern over an unexpected reported net loss and a doubling of debt

[97] Author's rendering of data compiled in 10-Q filing (2016-2019) (SEC.gov EDGAR)

reflected in the 10-K filing for the full year 2019. In essence, despite the alarm ringing that capital must be conserved and invested in shoring up a potential boondoggle for the balance sheet and company overall, the company turned to buybacks to signal confidence and maintain an elevated share price. Unfortunately for Boeing and its shareholders, the buybacks left the company unprotected from the near deathblow that COVID dealt the company and would send shares spiraling downward along with the company's credit rating and debt to equity ratio[98].

In fact, it actually took two crashes and, eventually, a CEO replacement to finally rein in the program, after which the company quickly supplicated lawmakers for funds to continue business in strategically important areas. Lazonick may well argue that the money may have been better spent in improving the faulty aspects of their flagship products. However, Lazonick would not have noted the further issue of these planes becoming immediately liabilities on the balance sheet rather than assets as they had been counted, particularly as Boeing's accounting took note of expected deliveries to come as it projected the annual cash flows.

In the end, it would be the CARES Act assistance from the federal government, that totaled only slightly more than the cost of the decade's share buybacks, that would save the company from having to take drastic action, potentially including bankruptcy. Indeed, the company ultimately requested $20 billion more than even their buyback programs over the past decade.

In particular, the rapid decline in share price to below $100 per share in the aftermath of the COVID case reports in the US and shutdown of flights laid bare the folly of the late cycle repurchases at such elevated share prices. Indeed, over $10 billion was spent on buybacks in the waning quarters of the bull market, with the $20 billion authorization suggesting caution was

[98] The company's debt to equity ratio reached 5 to 1 in early 2019.

truly thrown to the wind at precisely the wrong point in time. In the end, the company's overstated bullishness on share price that had served as a reliable signal to investors for the better part of a decade had become a harbinger of fragility that only a bailout could sustain before ultimately breaking the balance sheet, a topic that will receive scrutiny later within the paper.

6. Self-Dealing Debt

While Boeing did eventually imbalance itself and avoided dutiful maintenance of cash and expenditure on its flagship business' significant issues, it did not often do so directly through debt issuance. Therefore, the example best fits within the stage of speculation that portends the move to a final and most dangerous stage. In this case, the final stage is reflected in persistent debt issuance to fund a firm's appetite for its own shares. As we can see in the financial crisis, this balloon can be popped by simple rising interest rates. In this instance, it would be a more extreme exogenous shock that revealed an unhealthy habit.

Essentially, as lenders do under the auspices of Minsky's writings in terms of lending being predicated upon ever-increasing asset prices, so too did firms borrow under the impression of continually increasing share prices. Under these premises, the debt could only be paid off if share prices continued to increase, which to some extent was something that the corporate boards themselves were attempting to kickstart through such programs. As such, the programs were essentially ponzi in nature, predicated on a bull market that would continue to run (often with their help as established in earlier chapters) and therefore make the debt issued worthwhile. As we now know, that was an irrational and unsustainable strategy for corporate governors that was eventually imploded in early 2020.

In terms of the two dominant trends of the post-crisis era, certainly corporate debt and buybacks align[99]. In the decade after the financial crisis, corporate debt issuance increased threefold, moving upward in tandem with the aforementioned buildup of buyback programs[100]. Per data compiled by Bloomberg, 2017 saw an all-time high in debt-financed share buybacks, growing over 300 percent from its 2009 nadir alongside the similar increase in corporate debt[101]. Moreover, the peak of 2017 eclipsed the prior fervor that saw tech-focused firms piling into their own shares as share prices soared prior to the dot com bust[102], a prior peak of leverage that saw many firms fall into insolvency thereafter.

Indeed, the current ratio, which measures the current assets over liabilities, continually rose in the post-crisis era among major energy and industrial companies and remains elevated as the coronavirus effects persist[103]. As of early 2021, the current ratio among major indices remained at near historic highs. Indeed, the debt levels of major firms and index leaders, like the aforementioned Boeing, ballooned significantly in just one decade.

Just a few points of reference, 3M saw its debt levels accelerate from just $1 billion in 2010 to $17 billion at the close of 2019, Exxon Mobil saw its debt skyrocket alongside ailing oil prices to nearly $50 billion from just $6.6 billion about a decade prior, and Occidental Petroleum increased its debt, largely through aggressive buybacks and M&A action, 14.5 times over. In each case, the buyback programs and dividend distributions continued despite such stark figures flooding the balance sheet. In many cases, these buybacks and payouts persisted despite credit downgrades, as a peak of low-credit quality debt issuance pervaded the bond market.

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[99] See Appendix table 10
[100] Chang, Joyce (2019) “Stock Buybacks: Is Excess Cash Being Spent Wisely?” *JP Morgan Research*
[101] Calderone, Gregory (2019, Jan 27). “Debt-Financed Share Buybacks Dwindle to Lowest Level Since 2009”. *Bloomberg*
[102] ibid
[103] S&P Global Intelligence (SPGI) Data: 2006 to 2020

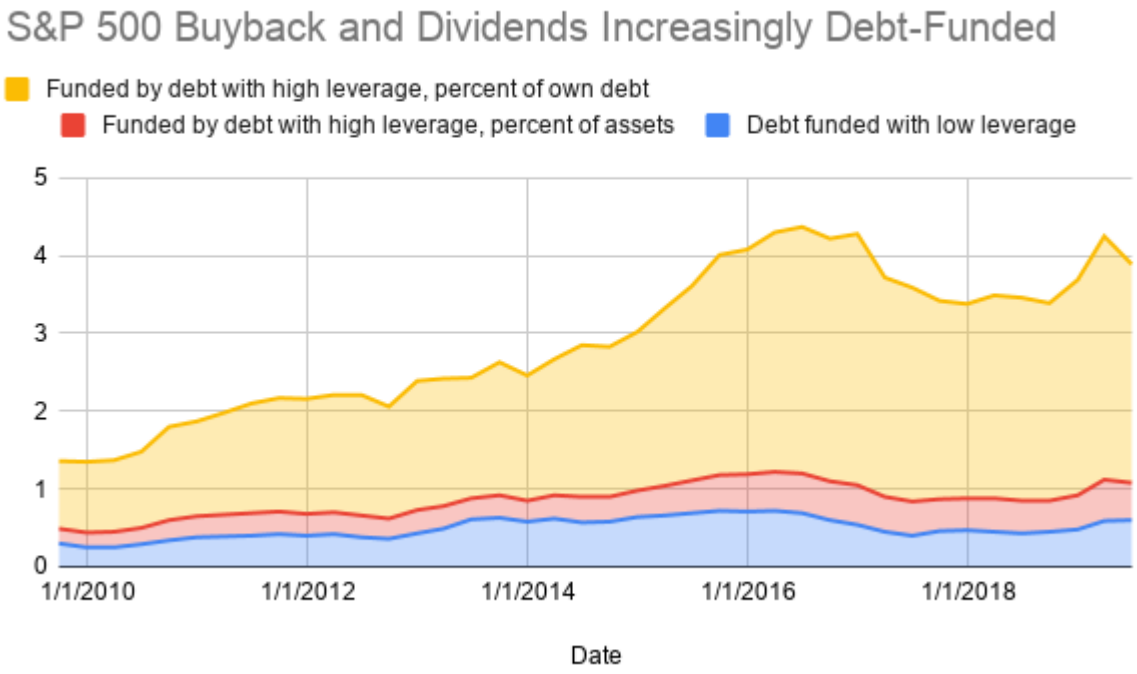

Exhibit 20[104]

In fact, in another callback to a market catastrophe, the capital allocated to share buybacks among large cap companies in the United States exceeded free cash flow generation among these firms just prior to the Coronavirus crash[105]. The move past the 100% of free cash flow marker was the first time it had eclipsed that mark since 2007 and, in many cases, was pushed beyond this mark by company's that were not cash flow generating in the first place towards the later end of the cycle[106].

In fact, nonfinancial corporate debt reached a top as a percentage of GDP in 2019, with junk bonds also coming into vogue as the cycle continued[107]. As such, credit quality was

[104] IMF (International Monetary Fund). (2019). Global Financial Stability Report. Lower for Longer.
[105] Powell, J. (2020, April 2016), "Buybacks: free cash didn't always flow". *The Financial Times*
[106] ibid
[107] Altman, I. (2020) "Covid-19 and the credit cycle". *Journal of Credit Risk.*

deteriorating across corporates while these very same companies went into debt in order to shore up equity prices. Clearly, this is not a sustainable corporate strategy.

Cognizant of this trend, the International Monetary Fund noted that the trend of leveraged share repurchases, particularly among small and mid-cap public firms in the United States, was a primary concern of the overextension of business late into the bull market cycle[108].

This late cycle behavior contrasts sharply with the positive relationship between cash flow generation and buybacks that had been observable within the more virtuous stage of the expansion and much of the pre-crisis era and within many of the multivariate regressions and studies performed recently, many of which are cited within this study. Interestingly, the level of debt-driven buybacks would actually artificially peak among S&P 500 firms in 2017, as tax benefits would come to increase appetite for expenditure of operational cash and curtail some of the rampant debt spending seen. Still, it by no means ended the appetite to eat into balance sheets as much more cash was actually spent in the final years of the longest bull market in history.

Paradoxically, it would appear to be the Tax Cuts and Jobs Act of 2017, which spurred on even more buyback activity, actually helped in alleviating some of the debt issues that may have even exacerbated the issues already apparent[109]. The effect was largely driven by the repatriation of funds to the United States from abroad and a lessened tax expenditure that alleviated strain on utilization of cash[110]. Thus, firms readily deferred what might have been tax revenue to the government into repurchase plans at an even stronger pace[111]. Still, it must be noted that it does not account for the small and mid-cap firms that would paint a starker picture of remaining

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[108] IMF (International Monetary Fund). (2019). Global Financial Stability Report. Lower for Longer.
[109] Lazonick, et. al (Jan. 2020) "Why Stock Buybacks Are Dangerous for the Economy". *Harvard Business Review.*
[110] ibid
[111] ibid

leverage, as the chart only accounts for the S&P 500. Importantly, the leverage noted in the IMF paper also noted a growing level of leverage among smaller firms into the pinnacle of the market cycle, which would have presumably been followed by larger cap peers had the intervention of legislation not quelled the ample appetite for debt that these firms were clearly displaying. Indeed, the deterioration of credit quality noted by the IMF among these firms may have been a harbinger of broader effects to come as debt-funded payouts ballooned as the cycle extended.

Per Yardeni Research, a Wall Street analysis firm, over half of stock buybacks amongst US firms were underwritten by debt by the tail end of the cycle[112]. However, it is worth noting that there is a wide range of conjecture on this point, with estimates of the total level of leveraged buybacks being precisely unknowable. Nonetheless, in line with the Minsky-like cycle noted, broader analyses of the correlation between high buyback proclivity and high leverage ratios is readily observable[113] even within conservative studies.

[112] Yardeni, E., Abbott, J., & Quintana, M. (2019). Stock Market Indicators: S&P 500 Buybacks & Dividends.
[113] Aramonte, S. (2020). *Mind the buybacks, beware of the leverage.* Bank of International Settlements

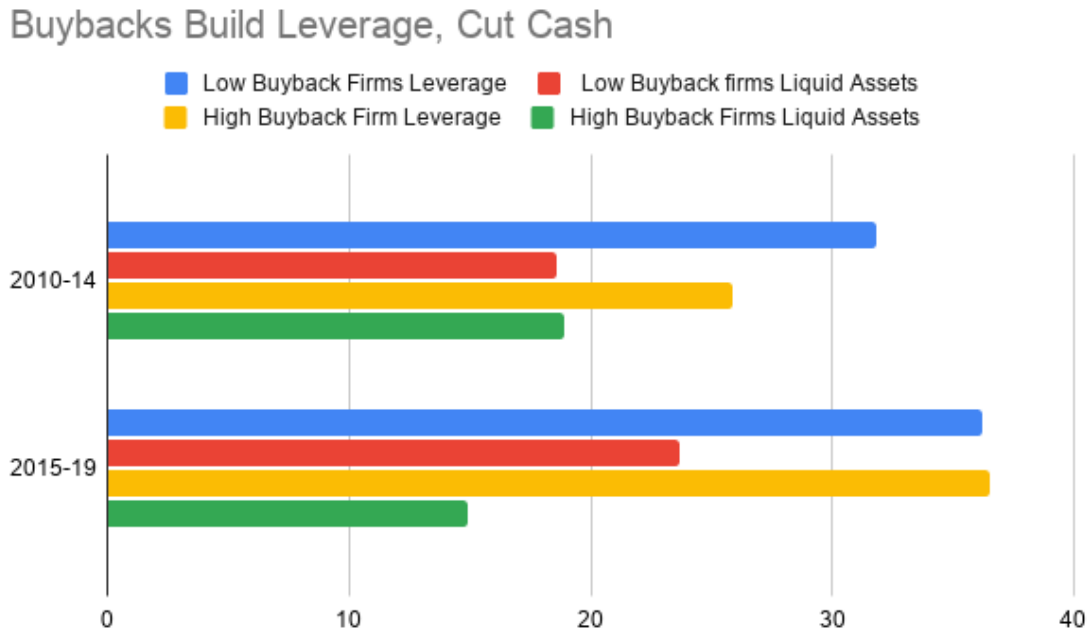

Exhibit 21[114]

Much of the early research concerning the immediate effects of the shocks amidst the COVID-19 crisis assess leverage and buyback programs separately. However, given the tandem dynamics and the regressions performed in Farre-Mensa et. al[115] in the leadup to the crash, perhaps this is a level of analysis missing a major contributing factor. In fact, Aramonte (2020)[116], while it provides solid analysis of the immediate issues and the returns and recovery of firms based upon their leverage and buyback proclivity, it often separates the two out for the analysis section, particularly within the share recovery of the performance of shares from high-buyback and high leverage firms. While it is not surprising that high leverage firms see their shares fall most dramatically in a liquidity event, the contribution of share buybacks to the

[114] Ibid. Figures in percent change
[115] Farre-Mensa, J., Michaely, R., & Schmalz, M. (2018). Payout policy. *Annu. Rev. Financ. Econ.*, *6*(1), 75-134.
[116] Aramonte, S. (2020). *Mind the buybacks, beware of the leverage.* Bank of International Settlements

weakening of balance sheets and their further extension throughout the cycle is the crucial detail that is ultimately intrinsic to the trend.

Still, there has been some significant work in providing regressions that show the important connection to debt as a main driver of share repurchases in the post-crisis period, notably due to loose money policies driven by the Federal Reserve that make this a reasonable decision on the part of many corporate managers. Notably, the Bank of France noted that the taking on of significant debt is a reasonable end to the cyclical nature of buyback programs that gradually become levered over the course of the cycle[117]. This is exacerbated in the most recent case due to the easy money policies of the Federal Reserve, which the paper explores at much greater length. While the central bank implications are worth exploring, the discontinuity regressions performed in the paper form a case that solidifies the link between leveraged share buybacks and the latter stages of the market cycle[118].

In terms of this paper's purposes, the link is directly in line with the case studies that illustrate gradual imbalancing and the increased allocation to share buybacks to the point that the cycle concludes and they become untenable.

Case in Point

General Electric

While companies like Boeing have reasonable rationale for repurchases, particularly as the programs were largely fruitful in terms of promoting share price and prompting market participants to accept the confidence of management in share appreciation until its flaws in not

[117] Elgouacem, A., & Zago, R. (2019). Share buybacks, monetary policy and the cost of debt. *Monetary Policy and the Cost of Debt (February 3, 2019)*.
[118] ibid

allocating capital toward its products more diligently was finally exposed, many companies followed an even more distressing tact of "throwing good money after bad". Perhaps no company is as guilty of this as General Electric, another company that has classically been regarded as a broader market indicator. In this case, the troubled company is a perfect example of the dangers of utilizing debt to finance buybacks instead of allocating toward major concerns and ultimately arriving at a crisis point sans the cash to continue operating.

Before analyzing the leverage, GE is an important case in signaling utilized for precisely the wrong reason. Rather than to signal confidence, the troubled leadership of GE might best be described as attempting to regain the confidence of the market, which the market responded by simply not buying. In this case, it would be perhaps the psychology of executives themselves being manipulated by the signals contemporary firms are able to leverage and then seeking to join in rather than attend to ballooning debt and sizable issues in funding irrevocable pension obligations in GE's case.

To be sure, the opening salvo of GE's audacious announcement that it would buy back a stunning $50 billion worth of stock was met with a significantly positive market reaction. As was the case with Qualcomm and with the broader market reactions seen in the immediate term and medium-term through analyses like those done by Two Sigma and Ikenberry, increased trading volume and a signal of confidence procured above average returns for the company

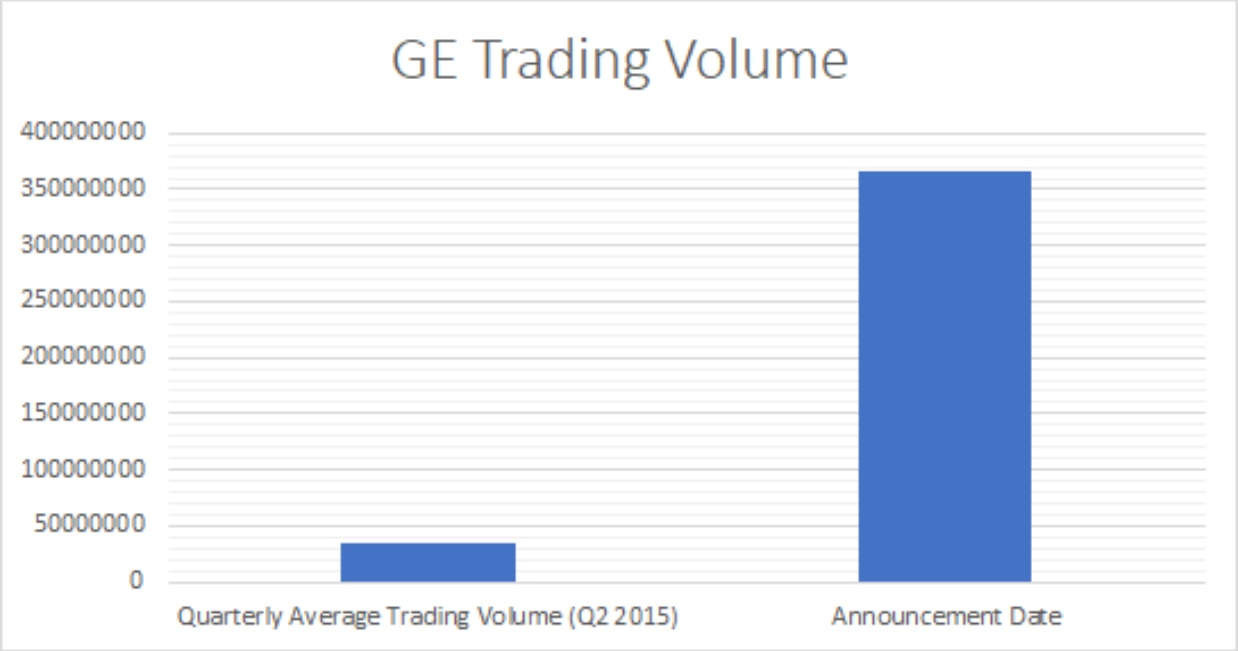

Exhibit 22[119]

Of course, the trading volume sparked a pickup in the share price, displaying what has already been noted in terms of the signaling power and furthermore the amplified reaction to more ambitious buyback programs. In fact, GE shares maintained their buoyancy for the ensuing weeks and months, finishing the quarter around the same share price as had been spurred by the announcement. The announcement in itself spiked shares upward nearly 300% of what had been their year to date gain as of the announcement as well, placating shareholders that might have otherwise urged management to provide more value.

[119] Author's calculation sourced from Yahoo Finance historical trading data

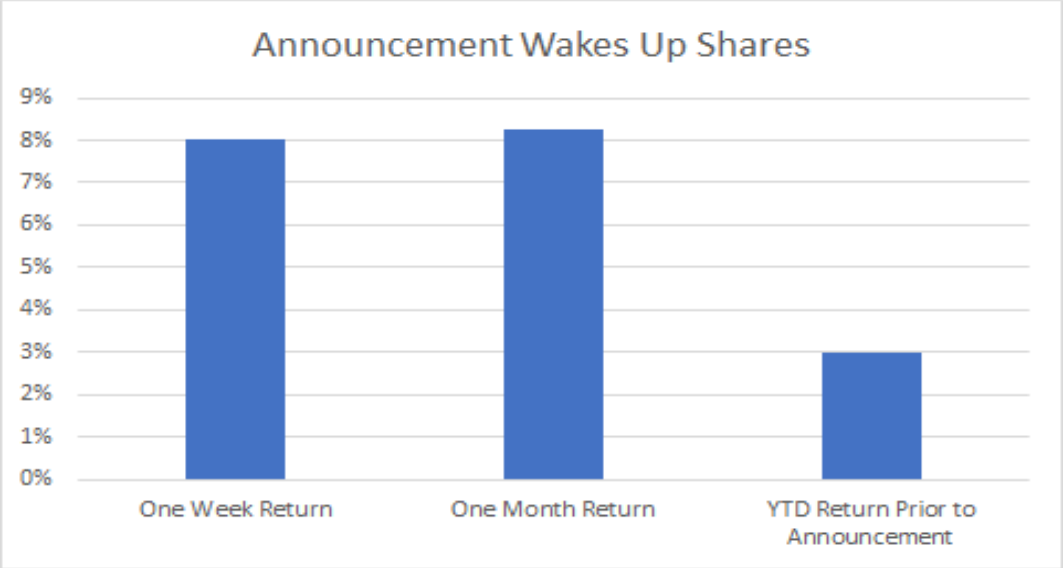

Exhibit 23[120]

In terms of the timing over a more long term basis, however, it was not as opportunistic, coming at the tail end of a bullish period for the stock. While shares had climbed over 200% from their trough in 2009 at the point of the share buyback announcement, and leaped alongside the startlingly bold program's disclosure, the program's actual fulfillment came while the share price approached its zenith. The purchases, numbering in the billions of dollars and financed by debt, ultimately purchased shares around the $30 per share level according to filings on average purchase price[121].

[120] Author's calculations, share price data sourced from yahoo finance database.
[121] Sec.gov EDGAR General Electric 10-K filings.

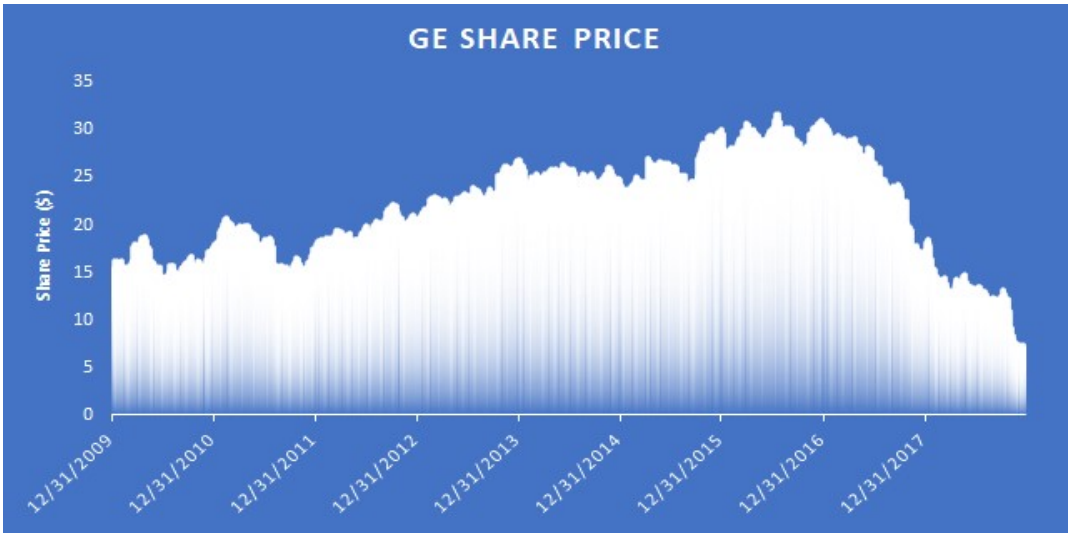

Exhibit 24[122]

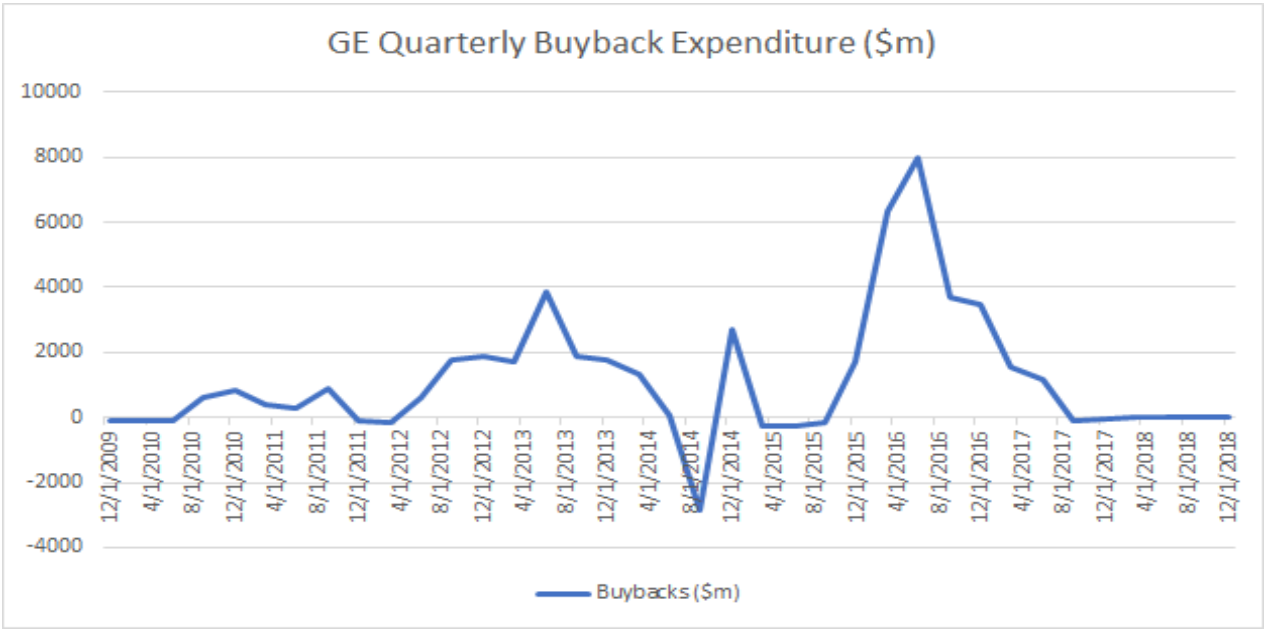

Exhibit 25[123]

[122] Data: Yahoo finance historical share price database
[123] Data: SEC EDGAR system, GE quarterly filings. Sec.gov

At the same time as management sought to purchase shares at their peak, the company's cash balance, which was increasingly dwarfed by the company's long term debt, dwindled. Thus, the company's call to return value to shareholders was fleeting to say the least and ultimately actually illusory as the company leveraged itself to fulfill the promise and eventually did not even fulfill it at all. Despite many firms doing the same thing, as the IMF notes, GE's status as a classic blue chip stock, a Dow 30 component, and one of the oldest companies in American quickly drew raised eyebrows and, crucially, a watchful eye from credit ratings agencies. Moody's, as a point of reference, quickly called the move a means by which financial maneuvering and undue risk taking was being pursued in favor of equity shareholders and explicitly at the expense of the firm's growing list of creditors[124]. In due time, this would appear prescient as the demise of the American institution nearly came from it's own internal mismanagement, not least in gross capital misallocation on buybacks almost exclusively as share prices rose.

In fact, Moody's assigned credit rating to the company fell precipitously in the ensuing years as the company poured capital into ultimately non-essential programs and buybacks. In just three years, the company would see its credit rating fall from just below the uppermost echelon to just one rung above junk[125] and the stock fell along with it. The issue thereafter was an inability to secure affordable financing to care for the rejuvenation of the business and created problems with refinancing existing debt. Despite numerous restructuring efforts amidst its myriad of ancillary problems, the company barely managed to recover to a point of sustainability and continued to operate free cash flow negative. Indeed, simply in order to remain a viable

[124] Moody's Credit Rating: Rating Action History, General Electric Company.
[125] ibid

business, numerous profitable units had to be sold off in order to raise cash to repay debts and attend to pension and other financial obligations.

Lost within the discussion was management's proclivity to expend cash reserves and thereafter even take on debt to chase equity returns at precisely the wrong point. Perhaps foreseeably in the context of this paper's framing, the buybacks followed and amplified during the cycle, reaching a fever pitch at the peak of the cycle.

Somewhat ironically, the company did not actually end up completing its program of promised share repurchases and further cut its dividend to a minimum amount. While these expenditures were essentially cut to zero, the company still required the spinning off profitable businesses that it might not have otherwise needed to offload had capital been expended more wisely and not built upon a ponzi-esque bullishness that came unfortunately late within the cycle.

To this end, one can readily see that the rather rapid recovery from the Great Financial Crisis fomented a behavior that chased equity returns available in purchasing their own shares. The newfound stability in the recovery the shares were enjoying coaxed management to repurchase more aggressively, which in turn helped promote even more share appreciation. The crucial lesson in GE however is that it quickly moved beyond mere speculation toward the final end of ponzi behavior by piling on debt to satiate shareholders with buybacks while ultimately burning their creditors. While a herculean effort by a new CEO in late 2018 aided in revitalizing the company, an effort in which buybacks and dividends were essentially removed from company strategy, the company's careless spending on share repurchases helped in leaving the company basically helpless to deal with the catastrophic impact of Coronavirus.

7. CARES Act Carries Ailing Firms

Of course, alluded to consistently throughout the paper is the subject of bailouts that followed after the now-established fragility that share buybacks had a hand in fomenting. The near immediate response of the US federal government and the Federal Reserve in loosening credit requirements and providing grants and low interest loans to companies totaled trillions of dollars, the largest such action since the financial crisis.

The programs aimed at helping businesses were spearheaded by the Coronavirus Aid, Relief, and Economic Security Act (CARES) Act and its subsidiary Paycheck Protection Program (PPP). In total, the program provided $2.2 trillion in aid to businesses large and small, hospitals, healthcare providers, as well as one-time cash payments[126]. While the PPP Program is worth exploring in terms of assistance to many firms maintaining solvency, it remained largely contingent on employment and is therefore an arm's length removed from buybacks. Many other aspects of the CARES Act aimed at businesses, by contrast, consisted of outright cash grants and low-interest loans[127] that took employment less explicitly into account and therefore is more interwoven with the situation the companies had placed themselves into in the years prior. This was highlighted foremostly by hotels, cruise lines, and perhaps to the largest extent, airlines[128]. While cruise lines were largely left out in the cold due to their typically offshore domiciles and hotels were largely catered to via the PPP program and a modicum of loan forgiveness, airlines were uniquely attended to by the government.

Per Division A, Title IV, Subtitle A of the act[129], $25 billion in loans and loan guarantees were offered explicitly to passenger air carriers, repair station operators, and ticket agents while

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[126] Health and Human Services (2020). "CARES Act Provider Relief Fund: Data". HHS.gov.
[127] Abate, M., Christidis, P., & Purwanto, A. J. (2020). Government support to airlines in the aftermath of the COVID-19 pandemic. *Journal of air transport management*, *89*, 101931.
[128] ibid
[129] United States Treasury Department (2020). *Coronavirus Aid, Relief, and Economic Security (CARES) Act, Section 4003(b).* Treasury.gov

an additional $4 billion was allocated to cargo air carriers. Further, another $17 billion in loans and guarantees were offered to firms like Boeing and GE that were deemed critical to national security. Interestingly, alongside the restriction on layoffs of employees contained within the act, an explicit prohibition on dividends and share repurchases was instituted to maintain stability amidst the crisis[130]. The structure of the loan programs were differentiated from the bailouts offered in the financial crisis a decade earlier, perhaps due to lessons learned and the unforeseen political consequences wrought from the provision of blank-check bailouts. To be sure, the exogenous nature of this shock made a significant difference in public perception. Yet the rub lies not in public perception but the necessity of intervention in order to stave off widespread corporate defaults, especially across critical sectors.

While the issue of stabilizing important national security sectors goes without saying, the concern over industries like airlines that perhaps matter far less to national security is less clear. Further, with regard to both the firms integral to national security and those not, the issue more so lies in the fact that among the many programs aimed at saving American industry, perhaps too little attention was paid to the systemic importance of certain firms or the situation that many companies put themselves into. Instead, some of the largest loans that were offered were to the most indebted companies in the industries receiving aid which, also tended to be the most freewheeling with share buybacks despite their precarious financial predicament. Of course, this creates an issue as a sort of moral hazard.

[130] ibid

Indeed, salvaging a company that has seen its revenue evaporate during a crisis through no fault of its own is likely a worthwhile endeavor and, as many recent papers on the subject of the COVID-19 bailouts have laid out, eg. Dick[131], Meier et. al[132] and others.

However, yet again, the analysis of the early responses might be best observed at a more granular level. In this case, the examination will be done at both a firm and industry level for the best glance at the key aspects of government response and its potential pitfalls.

Case(s) in point: Airlines

In truth, both GE and Boeing are prime examples of the CARES Act swooping in to save structurally important companies[133]. However, in terms of CARES Act funding, both play integral roles in supplying an industry that was given some of the largest grants and low-interest loans in the immediate aftermath of the COVID outbreak globally.

Indeed, share repurchases, along with dividends, and their suspension were cited among the foremost risks to liquidity by management in SEC filings immediately following the outbreak of COVID-19.

"We are taking a number of actions to improve liquidity. We had paused our open market share repurchase program since last year, and in March 2020 our Board of Directors terminated its prior authorization to repurchase shares of the Company's outstanding common stock. In March 2020, we also suspended the declaration and/or payment of dividends until further notice."

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[131] Dick, D. L. (2020). Bankruptcy, Bailout, or Bust: Early Corporate Responses to the Business and Financial Challenges of COVID-19. *Bankruptcy Law Letter*, *40*(7).
[132] Meier, J. M. A., & Smith, J. (2020). The COVID-19 bailouts. *Available at SSRN 3585515*.
[133] Aid, C. (2020). Relief, and Economic Security (CARES) Act. *Pub L*, (116-136), 335.

Boeing Corporation 10-K (March 2020)[134]

At least in part due to misplaced allocation of their respective cash cushions, both of those firms received major grants and low-interest loan programs from the federal government to stay afloat[135]. Both firms were considered strategically significant and therefore were disallowed from feeling the impact of the COVID crisis that might have required, at the least, some significant firm reorganization. Boeing eschewed the outright grant programs based upon the public relations nightmare it entailed, but it nonetheless received tens of billions in loans [136] and also aided in allowing each company to issue bonds that would help each remain in business. Essentially, a backstop was put in merely by the signal that each company would be saved by the government should worse come to worst[137].

However, the industry that both of these companies supply in terms of engines and planes was perhaps the most affected by the impact of COVID-19 and received among the largest bailout programs as well as paycheck protection program funding was the airline industry. Further, in terms of the dynamics established, the industry overall and its larger components are exemplars of the Minsky-esque cycle that buybacks drove and, in the end, weakened the balance sheets of the companies to the point of requiring significant government intervention.

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[134] SEC (2020) EDGAR. Boeing Corporation 10-K filing.

[135] Johnson, A. F., Rauhaus, B. M., & Webb-Farley, K. (2020). The COVID-19 pandemic: a challenge for US nonprofits' financial stability. *Journal of Public Budgeting, Accounting & Financial Management*, *33*(1), 33-46.

[136] Mohsin, S. (2020, June 16) “Treasury Weighs Safeguarding $17 Billion in Aid for Boeing, GE” *Bloomberg.*

[137]

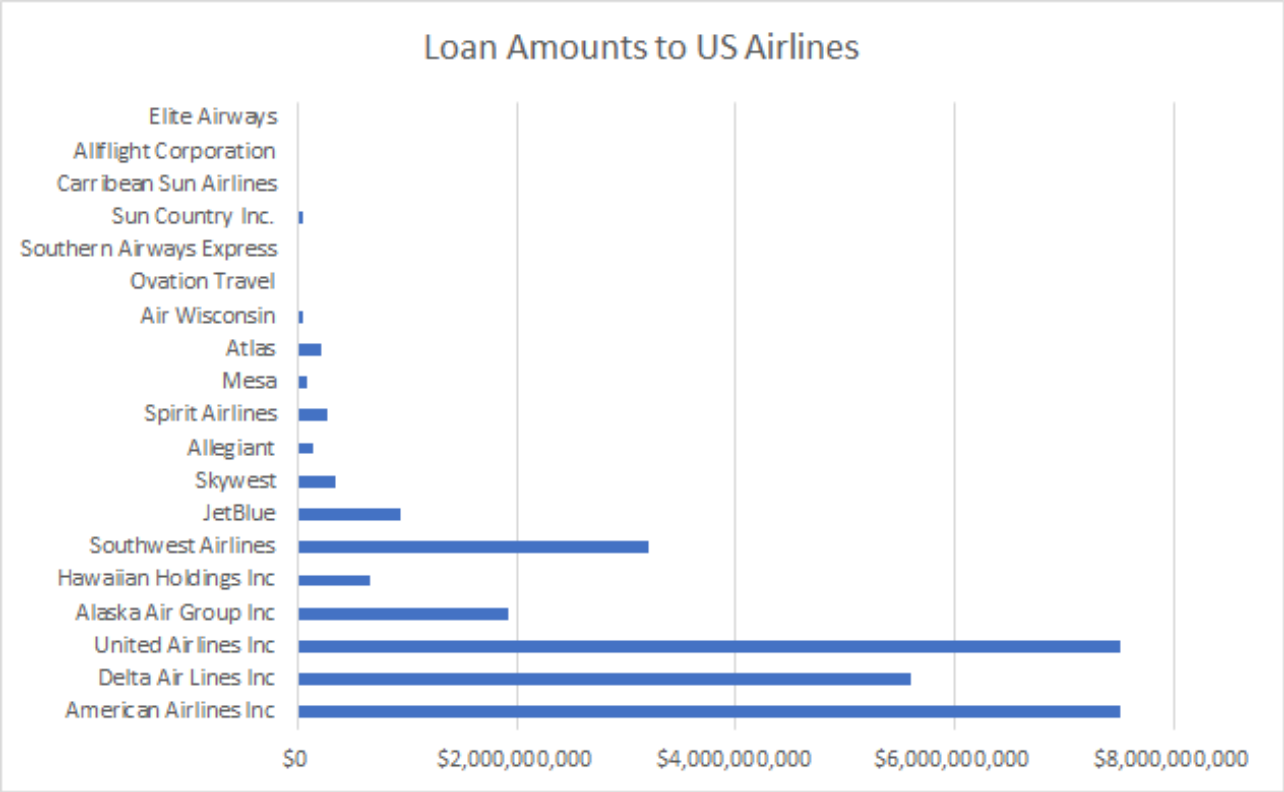

Exhibit 26[138]

Overall, more than $25 billion in aid was allocated to the US airline companies either through loans or grants, with more federal money going towards the more highly levered companies and the companies that had pursued a grander scale of buybacks despite their leveraged nature. Indeed, the companies that were generating the least free cash flow but nonetheless pursuing debt-driven buyback programs were allocated the largest share of aid, independent of passenger trends and what might otherwise be considered meaningful figures. Despite Alaska Airlines only flying less than one third of the passengers that are flown by Southwest Airlines[139], it received about half of the funding received by Southwest solely due to its capital position after spending billions on buybacks in the years prior.

[138] Data sourced from Treasury.gov (Author's compilation of transaction summaries)
[139] Mazareanu, E. (2021) "Leading airlines in the U.S. by domestic market share 2020" *Statista*.

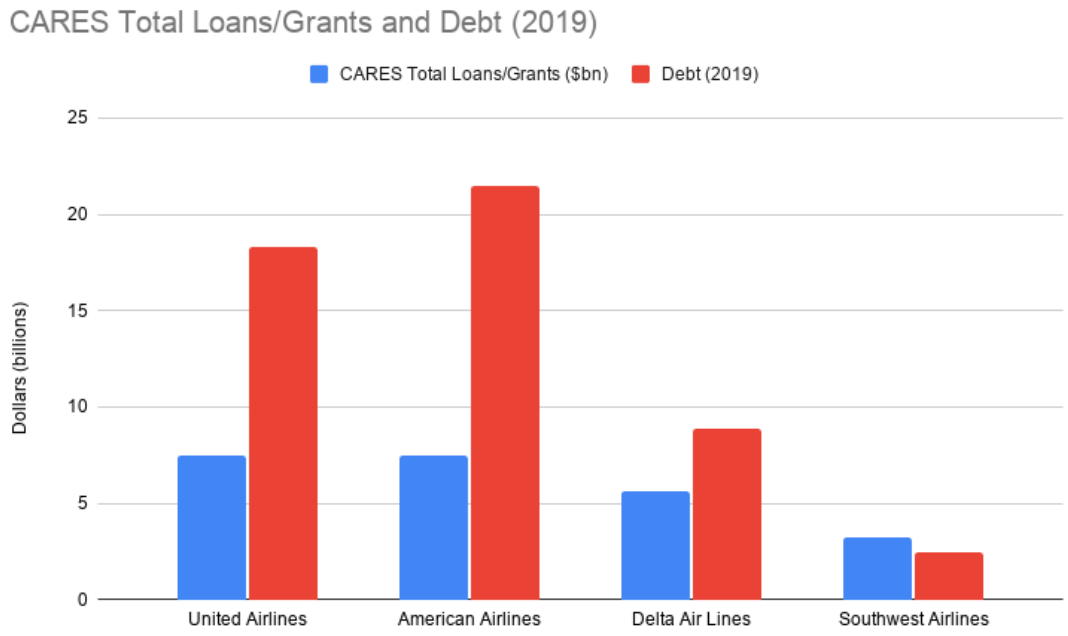

Exhibit 27[140]

Illustrating the point further was American Airlines which received the largest set of grants and loans despite its inability to generate free cash flow and its pursuit of buybacks under the auspices of negative cash flow generation.

[140] Data sourced from SEC Edgar system, treasury.gov

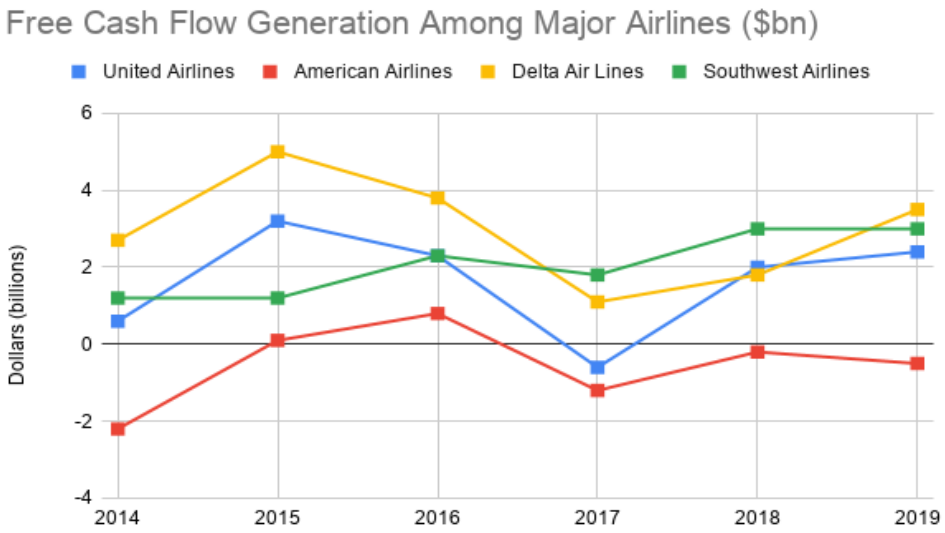

Exhibit 28[141]

In fact, American Airlines in particular continued to undertake more and more buyouts once its free cash flow turned negative. Therefore the company was necessarily using otherwise necessary cash and taking debt in order to repurchase shares. Clearly, the stage of moving toward instability envisioned in Minsky's model of destabilizing stability.

[141] Data sourced from SEC filings accessed through SEC EDGAR system

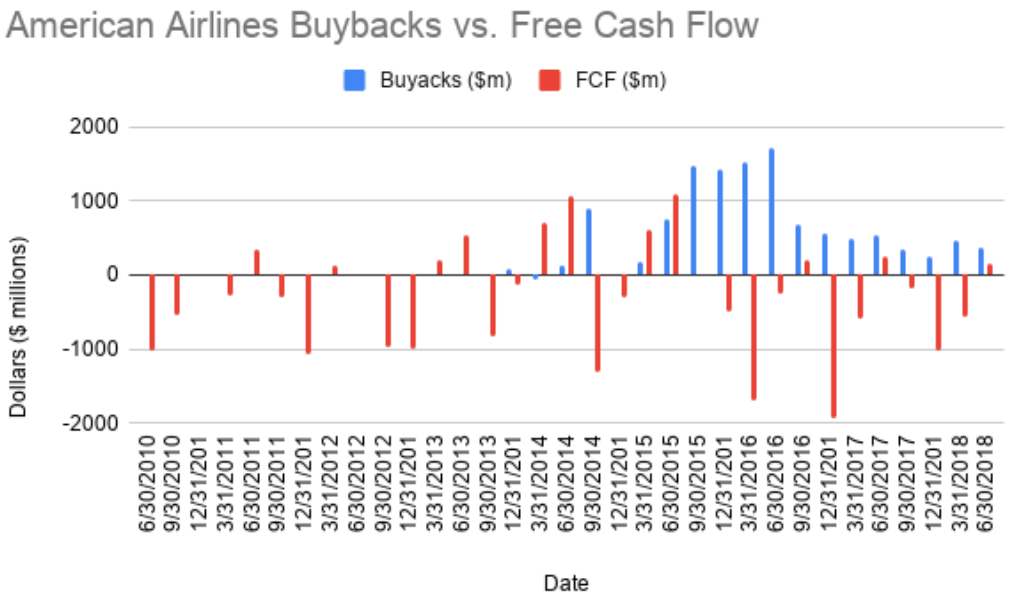

Exhibit 28[142]

For American Airlines, the pickup in debt levels coincided with the tail end of the cycle and, despite losses that threatened the business, more money was piled into share buybacks in the apparent hope that such action would help gin up share appreciation. The largest periods of share buybacks came in quarters where share prices were abnormally elevated, but the actual core of the business was not performing well and cash flow generation was flailing. In the end, this left the balance sheet of the company quite vulnerable as revenues disappeared rapidly as the coronavirus shut down air traffic completely.

It was not alone either, as Delta Air Lines amplified its buyback program to about half a billion dollars per quarter in the quarters just preceding the coronavirus crisis. This was despite its own struggles with free cash flow noted in the chart above. Indeed, each of the airlines largely saw the same trend in terms of their share buyback programs that trended along the path of instability outlined in the procyclical nature of buybacks. However, it is also clear that some airlines took this to a much larger extent than their peers.

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[142] Data: SEC EDGAR system, American Airlines 10-Q filings. SEC.gov

The exogenous nature of the shock that ultimately eliminated demand, there remains questions as to the level of assistance the government must grant after such a weakened balance sheet. This is especially so as 96 percent of the free cash flow generated by airline companies was put towards payout programs in the form of buybacks[143] and, in many cases, the grants provided were not enough to save the jobs of many employees that were nonetheless laid off in the wake of COVID's impact. Further, the bailout and loan programs less than the very needless expenditures each airline pursued on buybacks in just the waning years of the bull market cycle in many cases and overall less than each of the major airlines' expenditures over the post-crisis period.

Additionally, the firms that received the most funding from the federal government were the worst offenders in terms of pursuing buybacks[144]. Indeed, American Airlines again led the way in fomenting leverage in order to purchase shares while United also pursued debt issuances in order to fund its appetite for its own shares. In terms of establishing the firm footing of these firms in future, the government's willingness to quickly glaze over a decade of frivolous capital management is a sort of conundrum.

[143] Kochkodin, D. (2020, Mar. 16) "U.S. Airlines Spent 96% of Free Cash Flow on Buybacks" *Bloomberg.*
[144] SEC Edgar system, Treasury.gov (Author's calculation)

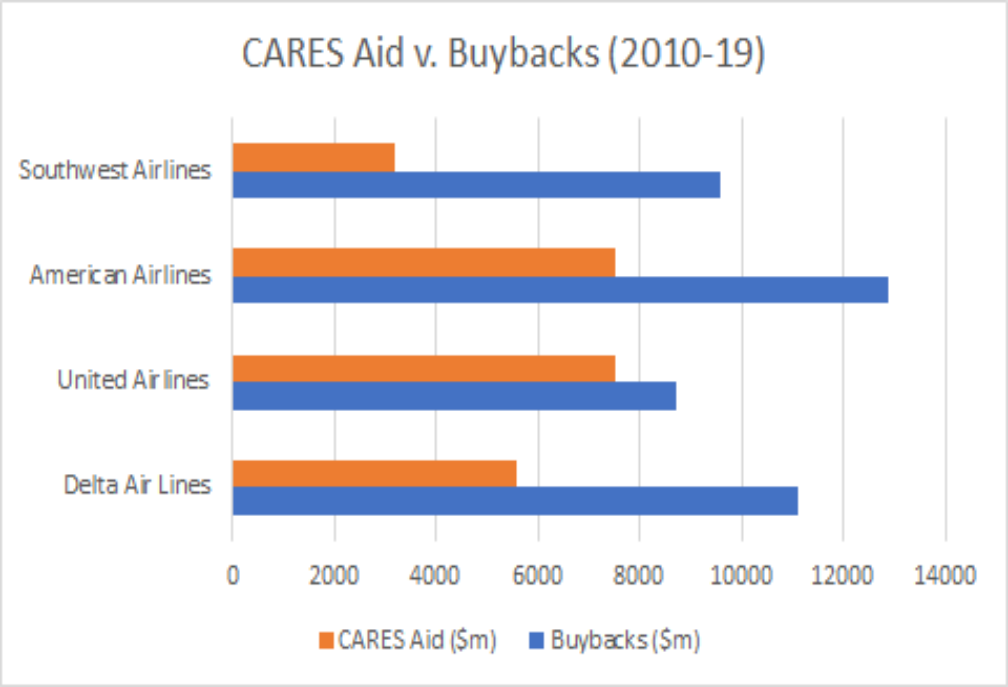

Exhibit 29[145]

This is important as well given the history of some of these firms, particularly in the wake of exogenous shocks as it is not the first time that the US airline industry had encountered such an issue and instead the highly levered and therefore unstable firms were left to reorganize and regroup without a tremendous amount of damage to the industry overall nor to the overall economy of the United States. Indeed, numerous airlines have gone through bankruptcy throughout history and many others have become consolidated into the major American carriers.

Additionally, there were no major fears of spillover effects or contagion that might have arisen from the airline industry, which also differentiates it from the Great Financial Crisis that might have served as a sort of rule by which the government could hold itself liable to act in such a dramatic fashion. Given the history of bankruptcies as a viable option for reorganization in the

[145] Data Sourced: SEC EDGAR System, 10-Q filings and Treasury.gov CARES Act transaction summaries.

industry, the move to bail out these companies might indeed have unforeseen consequences in forecasting future public policy action.

However, the bed may have already been made in this case, as there was already precedent for a bailout of the airline industry, which perhaps imbued so many airline executives with extreme confidence in the probability of their reception of federal assistance. This landmark event was, of course, the aftermath of the 9/11 terrorist attack on the World Trade Center[146]. Not only shocking the nation of the United States, the attack essentially gutted the airline industry with demand dropping precipitously due to the widespread fear of flying. In order to stabilize the industry in the wake of that extraordinary exogenous shock, the federal government instituted the Air Transportation Stabilization Board that offered loan guarantees across the industry[147].

Though the move was by no means uncontroversial even in its time, it ended up being a sort of predecessor to later bailout programs aimed at salvaging American automakers and important industries in 2008. This is closely linked to the idea of these industries as strategically important and the linkage of many non-US airlines to their respective governments[148]. Still, there is no guarantee as to the long-term solvency of these firms. Indeed, in 2001 widespread consolidation of the airline industry and quite a few bankruptcies occurred despite the the 9/11-related assistance.

The current conundrum shares some similarities with both 2008 and 20001, though the exogenous nature of COVID draws a closer corollary to the latter catastrophe of 9/11. However, much of the instability that is seen within the industry is driven by capital mismanagement and

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[146] de Rugy, V., & Leff, G. (2020). The case against bailing out the airline industry. *Special Edition Policy Brief*.

[147] ibid

[148] Zhang, Fangni, and Daniel J. Graham. "Air transport and economic growth: a review of the impact mechanism and causal relationships." *Transport Reviews* 40, no. 4 (2020): 506-528.

overaggressive tactics in terms of share repurchases, especially in terms of the more speculative and ponzi end of the spectrum as seen in the case of American Airlines. Nonetheless, these were the firms receiving the largest amount of aid and therefore given the most support to remain in business despite their demonstrably poor business decisions towards overextension.

Given that forecasts expect that the United states will take 267.9 years to generate enough tax revenue to make the airline grants and bailouts worthwhile[149], the question of the rules by which the government must feel compelled to intervene are critical to establish. Of course, as this is only a relatively small part of the overall $2.2 trillion in assistance earmarked, the question of proportionality in terms of providing government assistance is a topic worthy of rumination. In future, perhaps the historic payouts and needless expenditures of management will be taken into account in terms of providing for such bailout programs.

8. Conclusion

To be sure, buybacks are no more evil in and of themselves as Minsky considers finance and banking. Instead, this paper serves as a note that pro-cyclical share repurchases, that themselves can help abet share price increases both through signals and mechanistic effects, that they can create the potential for greater market downturns as balance sheets are left without the bulwark of a cash cushion, and can ultimately portend insolvency as companies move towards the ponzi end and sacrifice solvency in pursuit of equity returns and soaring share prices.

As Warren Buffett has famously remarked, the growing number of press releases about buybacks often make no mention of valuation or specific strategy for buying below a certain

[149] Dick, D. L. (2020). Bankruptcy, Bailout, or Bust: Early Corporate Responses to the Business and Financial Challenges of COVID-19. *Bankruptcy Law Letter*, *40*(7).

price. Instead, it would appear that the tendency of managers to pile more cash into these programs is only amplified as valuations rise despite earnings not accelerating to the same degree.

Indicative of this procyclicality, gross share repurchases reached a decade high level in 2019, just as US equity indices roared to a top well above the nadir that was felt amidst the panic only a decade earlier. At that point buybacks were most certainly not on the menu of many corporate boards. However, as Hyman Minsky lays out in terms of overextension in financial instability, so too can corporate managers overextend on this end. This moves from the expenditure of a percentage of free cash flow without necessarily sacrificing other allocations, toward the ignorance of other important aspects of the business in order to fund continued payouts, and finally towards debt issuance and leverage to sustain that appetite.

Needless to say, share buybacks imbalance the balance sheet by utilizing cash reserves, while often gaming the system in order to gain the acclaim of Wall Street analysts and maintain price appreciation for shareholders. Eventually, as noted in the test cases and the broader data on credit markets and leveraged buyback trends, this can quickly unmoor a company from firm footing in the event of a major crisis. Thereafter, many of these companies were in need of federal and central bank assistance.

Overall, the test cases and broad data provides a roadmap for the expansionary aspects of buybacks and their correlation to broader debt levels. In future, corporate governance should take note of these programs and rein them in so as to retain solvency and stability rather than short term returns or quarterly results. Similarly, it is important for regulators to take note of these trends as it might well serve as a solid indicator of overextension of firms towards ultimately non-accretive endeavors. In many cases it may serve as solid criteria to assess the importance of

aiding certain firms, just as many creditors might review management's ability to maintain a clean balance sheet.

To that end, the question of the moral hazard of these programs, while alluded to, is likely a question for further research and perhaps a follow up to this paper after more time has passed from the initial pandemic outbreak. Similarly, the proclivity of repurchase programs to coincide with looser money policies implemented by central banks is worthy of more examination, especially as the inflection after Federal Reserve Chairman Jerome Powell's pivot from hawkish to dovish in late 2018. Lastly, there should be a broader examination of the fear that many corporate governors feel about activist shareholders that can often be kept at bay by repurchase programs and generous payout policies. This element could well be explanatory and would be fruitful to address in future.

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Appendix

Selected Data Tables and additional descriptions

Table 1. Buybacks compiled over time. Sourced from S&P Buyback data

Sector ($millions)	Q4,'19	2020	2019	2010-15	2010-2020	Q4,'18 Peak
Consumer Discretionary	$16,620	$29,514	$68,476	$357,762	$738,968	$25,652
Consumer Staples	$9,429	$19,742	$33,838	$181,301	$407,418	$9,588
Energy	$5,025	$4,321	$18,750	$71,996	$249,907	$8,698
Financials	$50,232	$80,685	$178,685	$638,249	$964,426	$45,641
Healthcare	$20,041	$54,082	$83,864	$399,207	$718,573	$31,336
Industrials	$10,218	$33,230	$60,792	$301,986	$573,757	$23,026
Information Technology	$52,432	$201,851	$224,847	$943,530	$1,532,697	$61,298
Materials	$3,117	$8,113	$15,709	$52,466	$119,990	$5,857
Real Estate	$573	$2,661	$2,230	$13,263	$13,263	$1,480
Communication Services	$13,687	$81,446	$38,192	$140,889	$177,512	$9,556
Utilities	$211	$4,115	$3,355	$10,038	$19,184	$850
TOTAL	**$181,583**	**$519,762**	**$728,738**	**$3,110,687**	**$5,515,696**	**$222,980**

Table 2. CARES Act distributions to Big 4 Airlines. Source CARES Act Data, SEC EDGAR

	United Airlines	American Airlines	Delta Air Lines	Southwest Airlines
CARES Total Loans/Grants ($bn)	$7.50	$7.50	$5.60	$3.20
Net Debt (2019, $bn)	$18.31	$21.45	$8.87	$2.45

Table: Largest Buyback Programs since 2010. Source: S&P Global, Howard Silverblatt

Firm	**2015-2020**	**2010-2020**	**2010-2015**
Apple	$307,213	$423,038	$115,825
Berkshire Hathaway	$30,902	$30,969	$67
Alphabet	$67,159	$69,055	$1,896
Microsoft	$85,832	$128,519	$42,687
Charter Communications	$35,766	$36,582	$816
Oracle	$85,921	$127,703	$41,782
Lowe's	$19,108	$37,978	$18,870
Facebook	$37,690	$41,515	$3,825
Procter & Gamble	$29,124	$54,406	$25,282
Intel	$45,204	$81,661	$36,457
Visa	$38,328	$55,503	$17,175
Humana	$7,451	$10,338	$2,887
UnitedHealth Group	$17,030	$31,486	$14,456
Cigna	$9,235	$12,954	$3,719
Honeywell International	$17,082	$21,860	$4,778
Bristol-Myers Squibb	$11,866	$15,928	$4,062
Walmart	$32,346	$54,986	$22,640
HP	$11,223	$28,308	$17,085
Anthem	$8,489	$19,042	$10,553
Amgen	$35,684	$51,844	$16,160
Total	**$932,653**	**$1,333,675**	**$401,022**

Table 3: Boeing Quarterly Buyback Expenditure. Source: SEC EDGAR

Quarter	Shares Repurchased	Average repurchase Price	Cost
Q2 2016	15298532	$130.75	$2,000,283,059.00
Q3 2016	7558006	$132.32	$1,000,075,353.92
Q4 2016	3672589	$136.46	$501,161,494.94
Q1 2017	14911069	$167.89	$2,503,419,374.41
Q2 2017	13566647	$184.27	$2,499,926,042.69
Q3 2017	11,001,520	$227.25	$2,500,095,420.00
Q4 2017	6656930	$260.89	$1,736,726,467.70
Q1 2018	8875094	$338.46	$3,003,864,315.24
Q2 2018	8573602	$345.77	$2,964,494,363.54
Q3 2018	7048754	$347.57	$2,449,935,427.78
Q4 2018	1,560,854	$374.24	$584,134,000.96
Q1 2019	6,108,004	$384.93	$2,351,153,979.72
Q2 2019	800,641	$387.48	$310,232,374.68

Table 4: Qualcomm Share Buyback Expenditure. SEC EDGAR

Qualcomm Share Buyback Program	
Date	**Amount ($millions)**
Dec. 31, 2016	$313.00
March 31, 2017	$124.00
June 30, 2017	$259.00
Dec. 31, 2017	$91.00
March 31, 2018	-$1.00
June 30, 2018	$948.00
Dec. 31, 2018	$991.00
March 31, 2019	-$149.00
June 30, 2019	-$18.00
Dec. 31, 2019	$762.00
March 31, 2020	$1,404.00
June 30, 2020	$108.00
Sept. 30, 2018	$20,940.00
Sept. 30, 2019	$555.00

Table 6: S&P 500 Net Dividend and Buyback Expenditure, compiled by Bank of International Settlements.

Year	Net Dividends Paid	Net Buybacks
2006	259.39	332.35
2007	279.87	454.38
2008	284.16	-73.04
2009	256.22	35.14
2010	250	141.2
2011	281.52	296.1
2012	324.05	256.72

2013	353.55	325.68
2014	397.15	405.12
2015	443.35	413.21
2016	455.83	430.26
2017	483.01	398.69
2018	515.8	648.22
2019	551.95	603.41

Table 7: Airline Industry Annual FCF Generation. Rounded figures, SEC EDGAR

	Airline Industry Free Cash flow by year ($bn)			
	United Airlines	American Airlines	Delta Air Lines	Southwest Airlines
2019	2.4	-0.5	3.5	3
2018	2	-0.2	1.8	3
2017	-0.6	-1.2	1.1	1.8
2016	2.3	0.8	3.8	2.3
2015	3.2	0.1	5	1.2
2014	0.6	-2.2	2.7	1.2

Table 8 Buybacks to Corporate Debt to Bull Market Correlation.
Author's annotations sourced from FRED Data and Bank of International Settlements.

Year	Corporate Debt ($M)	Net Buybacks ($m)	Bull/Bear (1/0)	Annotation
1995-01-01	$ 1,785,204.00	$ 34,886.31	1	
1996-01-01	$ 1,876,162.00	$ 65,161.35	1	
1997-01-01	$ 2,021,164.00	$ 105,509.10	1	
1998-01-01	$ 2,266,967.00	$ 108,634.10	1	
1999-01-01	$ 2,511,724.00	$ 115,224.00	1	
2000-01-01	$ 2,700,361.00	$ 113,828.60	1	Dot Com Burst
2001-01-01	$ 2,899,414.00	$ 73,883.74	0	
2002-01-01	$ 2,910,483.00	$ 92,218.51	0	
2003-01-01	$ 2,963,870.00	$ 73,704.80	0	Recession ends early in 2003
2004-01-01	$ 2,994,357.00	$ 100,144.70	1	
2005-01-01	$ 2,992,643.00	$ 241,737.90	1	

2006-01-01	$ 3,145,734.00	$ 332,352.70	1		
2007-01-01	$ 3,352,574.00	$ 454,381.90	1		Financial Crisis Begins late 2007
2008-01-01	$ 3,551,248.00	$ (73,043.82)	0		
2009-01-01	$ 3,725,857.00	$ 35,143.24	0		
2010-01-01	$ 3,970,254.00	$ 141,202.60	0		Recession officially ends late 2009
2011-01-01	$ 4,170,891.00	$ 296,104.10	1		
2012-01-01	$ 4,550,807.00	$ 256,715.30	1		
2013-01-01	$ 4,822,299.00	$ 325,682.70	1		
2014-01-01	$ 5,143,545.00	$ 405,116.30	1		
2015-01-01	$ 5,552,613.00	$ 413,209.80	1		
2016-01-01	$ 5,844,359.00	$ 430,263.20	1		
2017-01-01	$ 6,168,968.00	$ 398,691.70	1		
2018-01-01	$ 6,302,780.00	$ 648,224	1		

		.40		
2019-01-01	$ 6,571,887.00	$ 603,413 .90	1	Last year of Bull Market Prior to Covid

Table 10. Corporate Debt Trends and Acceleration Post-GFC.
FRED Graph Observations Federal Reserve Economic Data St. Louis FRED System

Year	Corporate Debt ($m)	Delta Debt ($m)
1998-01-01	2266967	
1999-01-01	2511724	244757
2000-01-01	2700361	188637
2001-01-01	2899414	199053
2002-01-01	2910483	11069
2003-01-01	2963870	53387
2004-01-01	2994357	30487
2005-01-01	2992643	-1714
2006-01-01	3145734	153091
2007-01-01	3352574	206840
2008-01-01	3551248	198674
2009-01-01	3725857	174609
2010-01-01	3970254	244397
2011-01-01	4170891	200637
2012-01-01	4550807	379916
2013-01-01	4822299	271492
2014-01-01	5143545	321246
2015-01-01	5552613	409068
2016-01-01	5844359	291746
2017-01-01	6168968	324609
2018-01-01	6302780	133812
2019-01-01	6571887	269107
2020-01-01	7256816	684929

Table 11: American Airlines Buyback Program. Source SEC EDGAR System

Date	Buybacks ($m)	FCF ($m)
12/31/2013	$84.00	-144
3/31/2014	-$56.00	707
6/30/2014	$127.00	1063
9/30/2014	$907.00	-1302
12/31/2014	**$ -**	-302
3/31/2015	$181.00	617
6/30/2015	$750.00	1085
9/30/2015	$1,480.00	**0**
12/31/2015	$1,435.00	-501
3/31/2016	$1,525.00	-1689
6/30/2016	$1,711.00	-250
9/30/2016	$695.00	209
12/31/2016	$569.00	-1926
3/31/2017	$484.00	-579
6/30/2017	$529.00	251
9/30/2017	$359.00	-185
12/31/2017	$243.00	-1017
3/31/2018	$461.00	-575
6/30/2018	$376.00	160

Table 12: Qualcomm annual cash balance (SEC, EDGAR)

	Qualcomm Cash Balance ($m)				
Year	2019	2018	2017	2016	2015
Cash Balance	12,296	12123	38578	32350	30,947

Table 13: Loan amounts approved to air carriers (Source: United States Treasury, COVID-19 Economic Relief Data)

Industry	Firm	Loan Amount
Travel	American Airlines Inc	$7,500,000,000
Travel	Delta Air Lines Inc	$5,600,000,000
Travel	United Airlines Inc	$7,500,000,000
Travel	Alaska Air Group Inc	$1,928,000,000
Travel	Hawaiian Holdings Inc	$654,000,000
Travel	Southwest Airlines	$3,200,000,000
Travel	JetBlue	$935,800,000
Travel	Skywest	$336,600,000
Travel	Allegiant	$150,300,000
Travel	Spirit Airlines	$264,300,000
Travel	Mesa	$92,500,000
Travel	Atlas	$207,000,000
Travel	Air Wisconsin	$51,000,000
Travel	Ovation Travel	$20,000,000
Travel	Southern Airways Express	$1,800,000
Travel	Sun Country Inc.	$45,000,000
Travel	Caribbean Sun Airlines	$15,000,000
Travel	Allflight Corporation	$4,721,260
Travel	Elite Airways	$2,630,274